Journal

of the Academy

of Management

The
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NOTE: The Academy was organized on an informal basis from 1936 to 1940, and was inactive because of World War II from 1942 to 1946.

Suggestions to Authors

The objectives of the Academy of Management in their most recently revised form are succinctly worded as follows:

"The Academy is founded to foster the search for truth and the general advancement of learning through free discussion and research in the field of management. The interest of the Academy lies in the theory and practice of management, both administrative and operative. . . . It is not concerned with specialized procedures for the control and execution of particular kinds of projects that are significant chiefly in narrow segments of a business field.

"The general objectives of the Academy shall be therefore to foster: (a) a philosophy of management that will make possible an accomplishment of the economic and social objectives of an industrial society with increasing economy and effectiveness: the public's interests must be paramount in any such philosophy, but adequate consideration must be given to the legitimate interests of capital and labor; (b) greater understanding by executive leadership of the requirements for a sound application of the scientific method to the solution of managerial problems, based on such a philosophy; and (c) wider acquaintance and closer co-operation among such persons as are interested in the development of a philosophy and science of management."

It is suggested that, as a general rule, full-length articles contributing to these objectives be approximately 1500 to 3000 words in length. Interested consideration will also be given to shorter, abbreviated notes or ideas relating to specific aspects of management thought, philosophy, theory, techniques of wide applicability, curriculum-building, or teaching. Perhaps one of the more important heuristic functions that this *Journal* can fulfill is that of exchanging specific new insights into challenging management problems. Since what is really new tends to be still in an area of controversy, we shall expect (and hope for) considerable argument. Rebuttals, rejoinders, comments, objections, extensions of a writer's thoughts—all of these will be particularly welcome.

Many of us have specific, detached ideas on various topics, and notes on such topics could be submitted for the consideration of our readers without investing extensive scholarly effort. An important requirement is that manuscripts be written in a straightforward style of English—esoteric writing will find no place in the *Journal of the Academy of Management*. The Academy's Research and Publications Committee has decided against the publication of book reviews.

Manuscripts should ordinarily be double-spaced; however, single-spacing will be accepted if this makes it unnecessary for the author to re-type his article. A single copy of the manuscript will suffice. Typing, or any form of mechanical reproduction is acceptable, if it is clearly legible. *All* manuscripts submitted to the editor will be re-typed and identified only by a code number. This will insure an objective and impartial evaluation by the Academy's Research and Publications Committee. The editor will not reveal the identity of the writer to any person without the author's express consent.

Suggestions, criticisms, or comments on matters relating to the Journal will at all times find a welcome reception.

<div align="right">THE EDITORS</div>

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The Transferable Skills
of a Manager

THEODORE O. YNTEMA

Vice President—Finance, Ford Motor Company

INTRODUCTION

It seems to me that a man is educated if he has a sense of values thoughtfully evolved, if he has the basic skills and abilities generally needed to do the world's work, if he has a fair amount of classified and ordered knowledge, and if he finds satisfaction in work and play and enjoyment in the good things in life. In addition, of course, an educated man may, and often does, possess specialized competence in some particular field of knowledge or activity.

We would, I think, find agreement that a liberal education should be (and usually is) designed to develop a sense of values, to impart systematic knowledge in various fields, and to help acquire joy in doing and living. But with reference to the basic skills and abilities that are widely transferable from one field to another, the situation is quite different. Here we find the greatest deficiencies in liberal education, both in concept and in practice, and we also find efforts by the professional schools in many cases to compensate for these deficiencies.

EXECUTIVES MOVE EASILY FROM ONE JOB TO ANOTHER

The existence of basic skills and abilities widely useful and transferable from one field of work to another is clearly indicated by the evidence. Many men prepare for one career but shift with little or no handicap to another. Executives move from one kind of job to another—often with greater success than if they specialize in one type of work. I have seen a number of persons who were successful in teaching and research move easily to success in business. Consultants tackle problems with which they have little prior acquaintance and solve them readily. In my own experience I have been amazed to note the transferability of abilities and skills as I have shifted from one career to another and from one job to another. What impresses me is how much the requirements for various jobs have in common—particularly at the higher levels—and how easy it is in most instances to pick up the special knowledge in a particular field.

I do not imply that if one has the basic skills and abilities he can overnight become a great mathematician, physicist, musician, writer, or dancer. There are some careers that require not only special talents but also prolonged development of these talents. But even in such careers the basic skills and abilities are usually necessary or very helpful. What I am emphasizing is that most careers require the

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same basic skills and abilities and that in many such careers these basic skills and abilities constitute a substantial part of the requisites for success.

THE SIX BASIC SKILLS OF A MANAGER

Why should this be so? The reasons are not hard to discover.

First, the scientific method, the process of seeing and solving problems, is universal; moreover, it is largely (although not wholly) invariant from field to field in its basic characteristics.

Second, almost all careers involve relationships with people.

Third, a vital aspect of such relationships with people is communication.

Fourth, in practically all situations we are engaged in organizing scarce resources to achieve some given end. The general principles of such organization are common to various fields of endeavor.

Fifth, achievement usually calls for persistent effort.

Sixth, some memory is required, because one cannot operate with an empty head.

Let me restate these same six points in terms of our everyday personal experiences. In almost any kind of career we have to (1) recognize and solve problems—that is, we have to use the scientific method, which in its essentials is universally the same; (2) work with people—and to do this well, we have to understand them, size them up, motivate them, lead them, follow them, co-operate with them, love them, and be loved by them; (3) communicate our ideas to other people and receive communication from them; (4) organize—we have to organize our own activities and the activities of others for whom we are responsible; (5) work hard at the job—keep on working—and like it; and (6) learn to memorize faces, names, and facts important to our jobs.

If you can see and solve problems, if you understand people and know how to work with them, if you are good at communication, if you know how to organize the resources you command, if you can throw yourself into the task at hand, and if you have a good memory, you can do almost anything: You can be a first-rate teacher or a first-rate executive. And you can easily turn to any one of a wide range of careers.

This concept of skills and abilities that are generally useful and widely transferable, if it be valid, has important implications for education. It would seem to offer opportunities for simplifying the curriculum, improving the efficiency of the educational process, and raising the quality and level of education. More on this subject later.

Let me say a few words about each of these six basic skills and abilities.

The Ability To Use The Scientific Method

First, the ability to use the scientific method. The scientific method is the process of seeing and solving problems. It involves observation, the detection of

similarities and dissimilarities in phenomena, the tentative specification of categories and relationships based on observation and on deduction from prior discoveries, and the testing of such tentative hypotheses by experiment and experience. Logic and mathematics and statistics are, in various degrees and forms, required in particular applications of the scientific method. The roles of mathematics and statistics in the physical, biological, and social sciences are firmly established. I believe it is generally not realized, however, that certain concepts in mathematics and logic have widespread application to the ordinary problems of business activity and, in fact, to the ordinary problems of life. These concepts include (among others) rate of change, acceleration and deceleration, rate of relative change, and particularly the conditions for a maximum or a minimum. (We are forever trying to maximize or minimize something that depends on other variables.)

The most important part of the scientific method, however, is the part most neglected in education—namely, seeing problems. Observation of phenomena, the perception of possible uniformities or relationships, and the specification of hypotheses in suitable form to be tested—invention, if you will—are given lip service but often receive scant attention.

The scientific method is not the prerogative of the physical, the biological, or the social sciences. Science and the scientific method are not the same thing. A science is a body of systematic, ordered knowledge. The scientific method is the process of seeing and solving problems. Most students in the physical, biological, and social sciences do not master the scientific method—because most of them do not learn to see, or perceive, or invent. I believe that the scientific method (including perception) can be learned by competent students. I believe, moreover, that such learning should be one of the prime objectives of liberal and professional education. I think there should be more room in the curriculum for invention, creative thinking, and the specification of hypotheses.

Maybe things are different now, but when I was in college taking liberal arts I learned as much about the scientific method working on the farm and going fishing as I did in college. It is true I received good training in mathematics (that is, in deductive logic) and in communication. But in school I did not get much training in observation, in seeing, in developing hunches, in invention—which are even more important than the more routine processes of specification of the hypothesis and formal testing. Most high school and college education, in my time, involved too much spoon-feeding and too little emphasis on observation, detection of problems, and the development of ideas relating to their solution.

In this all-important field—the scientific method—the business school has done a comparatively good job. Much emphasis is placed on seeing and solving problems, especially in the study of business cases, in term papers, and in field work. I think much more can be done. I believe invention can be taught systematically. As Dowling and Posz pointed out in a recent article, creativity, or idea getting, can be taught; and the teaching can be greatly facilitated by helping people overcome three blocks—dulled senses, stunted imaginations, and lack of emotional

control.[1] When I say the business school does a comparatively good job in helping the student to master the scientific method, I am not giving very high praise. In this matter I think we have made only a good begining: the possibilities of helping the student to see and solve problems more effectively are almost infinite.

Incidentally, most of the case materials needed are right at hand in the every-day experiences of college life. Moreover, it is invaluable for the student to learn that the problems he will meet in business are in large part like the problems he now meets every day in his college life and that the processes of seeing and solving them will likewise carry over into business. There are, of course, exceptions to this generalization, but even the formal arrangements and procedures required in a large-scale organization are not entirely different from those required in a college or university.

Understanding People And Working Effectively With Them

Understanding people and working with them effectively is the second of the transferable skills and abilities. This, to me, is one of the most perplexing fields of learning. Because of these perplexities there is a tendency in education to concentrate on impersonal facts and ideas. In real life we have to pay much more attention to people. My controller often says to me with great wisdom, "The technical problems we can lick—the really touchy problems are people."

To work with people well we have to understand them—how they act and react, and, insofar as possible, why they react as they do. We have to size them up—their demonstrated and especially their potential abilities. We have to learn to take orders, to give orders, to join with colleagues in common effort, to touch base with interested parties, to motivate people to the action we want, to lead and to follow, to trust those who can be trusted, and to rely on those who can be relied on. If you know how to win friends and influence people, I will give you long odds on your success in almost any field.

In my college days understanding people and working with them effectively was almost entirely an extracurricular matter. This should not be so. I do not believe that our systematic knowledge of this subject is so limited or that the subject is so unimportant that it should be left out of the curriculum for a liberal education. In the business school some beginnings are made in personnel courses, but, so far as I know, the science of dealing with people needs a more systematic development and has not yet attained a place of first importance in the curriculum. This area seems to me to offer opportunities for research that can be of great significance in both education and in business.

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[1] Fred R. Dowling and A. Conrad Posz, "Ideas: The Basis for Effective Communication," *Journal of the American Society of Training Directors*, Vol. 14, No. 2, February 1960, pp. 3-6.

Communication—Written and Spoken

My third point has to do with communication—in written and spoken form. I shall not dwell on this subject because its importance is already generally recognized—by both liberal arts and business schools.

Organizing As A Pervasive Process

Fourth, we come to organization. In every aspect of life we try to utilize scarce resources to achieve, in the best possible way, some given end. Here is a process universal in our experience—a process susceptible to analysis and generalization. It involves such basic ideas as classification, order, and rational planning. In the life of an individual it means planning his activities, budgeting his time among them, and meeting deadlines. In group activities it involves defining jobs, assigning responsibilities, and developing means for co-ordination and supervision. Despite its importance, organization is typically neglected in plans of liberal education. On this point the business school usually scores well, though the study of organization is often particularized and the pervasive character of the process is often neglected. It would be more helpful for the student to know that the basic ideas of order and organization are transferable from non-business to business situations, and *vice versa*.

Persistency

Fifth, there is the matter of effort—persistent application to the job at hand. I have seen talented drones fail and second-rate intellects crash through to success by hard work. All the abilities in the world are not worth much unless they are really put to work with perseverance.

Memory

In this list of generally useful skills and abilities, memory is probably a poor sixth. Nevertheless, many a man, by memory of events and faces and names, has gone far beyond his competitors who, in analytical capacity, outrank him.

On these last two points—motivation and memory—I suspect we still have much to learn from the psychologists. Again, fruitful fields abound for further experimentation and research.

THE PROFILE OF THE SUCCESSFUL EXECUTIVE

Let me summarize what I have covered so far. There are transferable abilities and ways of work which are important in many fields. They are:

1. Mastery of the scientific method. This includes observation and invention, problem-recognition and problem solving.

2. Effective communication.

3. Understanding people and skill in working with them.
4. Organization of activities.
5. Persevering effort.
6. Memory of facts, faces, and names.

This is the profile of the executive—the profile of the man who can take on almost any job and do it well.

The acquisition of these skills and abilities is an important part of getting a liberal or a professional education. When I advance this thesis, I usually meet various objections. The first is that people are born with these talents—that they either have or they do not have them. I would concede that some people seem to be born with greater capacities for development than others. I would not concede, however, that a competent student cannot learn perception, or invention, or how to deal effectively with people. Certainly a man knows more about these things than a newborn baby.

Then I hear a second objection: "You can't teach these things." Well, you can't teach any one anything; you can only help him to learn. As Dean Berry of the Harvard Medical School said, "Educate is not a transitive verb. You can't educate anybody but yourself." The question is not whether you can *teach* invention, getting along with people, and organization; the question is whether these things can be learned. If they can be learned, they have an important place in any proper scheme of liberal or professional education.

Sometimes I suspect that the courses offered and prescribed in plans of liberal education are determined too much by the fields of specialization that are assumed to constitute the frontiers of knowledge for research. Invention and creative thinking, working effectively with people, and organization are not recognized as fields of learning. Neither the specialists nor the materials for learning in these fields are available. Consequently, these fields tend to be neglected.

MATHEMATICS, LOGIC, AND ABSTRACTIONS

Mathematics and logic broke away at an early stage from the substantive areas of their application, although, even today, we find courses in mathematics of finance, mathematical statistics, and so on. In breaking away, another difficulty was encountered. Mathematics tended to develop and to be taught as a subject in and for itself. This is fine for the man who wants to become a mathematician. It is not so fine for the ordinary student who would use the mathematics all his life if he could only see the embodiment in reality that corresponds to the mathematical abstractions he learns in the classroom.

Neither isolated facts nor pure abstractions are of any direct use. Only when facts are fitted into patterns and relationships do they have meaning or usefulness. Similarly, only when abstractions have embodiments in reality do they help in dealing with real problems. I do not object to the accumulation of new facts and the development of new mathematical theorems. These are needed to push out the boundaries of knowledge. Here I am talking about education. My observation has

been that often in education we get too many facts and not enough relationships, patterns, and, if you will, cause-and-effect explanations. On the other hand, mathematics often stands as an abstraction with little recognition that some parts of it contain the basic ideas that occur and recur in our every-day lives. *One of the marks of an educated man—perhaps the most distinguishing mark—is his ability to use what he knows in new situations.* Once this is learned, there is almost no limit to what he can do.

Here, I believe, we have the criterion by which we should judge professional and vocational education. *Unless a vocational course is intended to develop a skill that is either widely useful or of great importance per se, I do not believe it belongs in our universities or colleges or high schools.* Some of the courses in medical education—surgery, for instance, or anatomy—are narrowly vacational but are per se important. But a raft of other specialized courses could be dropped from our secondary schools, colleges, and universities with great economy and benefit to all concerned.

I suggest, however, that those in the liberal arts can ill afford to look down their noses at the work done in the professional schools. A good part of what goes on in business schools, in law schools, and in some medical and engineering schools is designed to fill the voids that are left by the usual liberal education. I refer particularly to the process of seeing problems, to the application of logic and mathematics in their solution, to organization (the marshalling of scarce resources for given ends), to the essentials of communication, and to the science of dealing effectively with people.

If the concept of a liberal education were rounded out to include the transferable skills and abilities and if this concept of liberal education were properly implemented, the work of the business school would be much simpler. Then the business-school curriculum could consist primarily of courses in institutions—their characteristics, functions, operations, and problems. With the prevailing deficiencies in liberal education, however, the business school has a twofold role: the extension and rounding-out of the student's liberal education and his introduction to the institutions and types of situations he will encounter in business.

CONCLUDING COMMENTS

In summary, let me state what seems to be the substance of a liberal education. It is the acquisition and development of, respectively, (1) a considered sense of values based on philosophy, religion, and experience; (2) the basic abilities and skills that are widely transferable and needed in nearly all walks of life; these have been discussed in this article; (3) a judiciously selected knowledge of classified facts and relationships; and (4) joy, satisfaction, and well-being—whatever you call it—in the exercise of one's faculties: in perceiving, hearing, touching, and doing in all the various aspects of life.

Most of these ideas are not new. Many of them were voiced with great elegance one hundred and five years ago by John Henry Cardinal Newman in

The Idea of a University. In "Discourse VII; Knowledge Viewed in Relation to Professional Skill," he wrote:

> *A Liberal Education* . . . is the education which gives a man a clear, conscious view of his own opinions and judgments, a truth in developing them, an eloquence in expressing them, and a force in urging them. It teaches him to see things as they are, to go right to the point, to disentangle a skein of thought, to detect what is sophistical, and to discard what is irrelevant. It prepares him to fill any post with credit, and to master any subject with facility. It shows him how to accommodate himself to others, how to throw himself into their state of mind, how to bring before them his own, how to influence them, how to come to an understanding with them, how to bear with them. He is at home in any society, he has common ground with every class; he knows when to speak and when to be silent; he is able to converse, he is able to listen; he can ask a question pertinently, and gain a lesson seasonably, when he has nothing to impart himself; he is ever ready, yet never in the way; he is a pleasant companion and a comrade you can depend upon; he knows when to be serious and when to trifle with gracefulness and to be serious with effect. He has the repose of mind which lives in itself, while it lives in the world, and which has resources for its happiness at home when it cannot go abroad. He has a gift which serves him in public, and supports him in retirement, without which good fortune is but vulgar, and with which failure and disappointment have a charm. The art which tends to make a man all this, is in the object which it pursues as useful as the art of wealth or the art of health, though it is less susceptible of method, and less tangible, less certain, less complete in its result.

It is the business of the business school to help the student toward these goals just as much as it is to tell him about production management, or marketing, or accounting, or the other peculiar institutions and practices of business. In the long run, the quality of a man's liberal education will be more important to his success in business than his specialized knowledge of business facts.

Automatic Horizontal Communication
in Management

JOSEPH L. MASSIE

University of Kentucky

INTRODUCTION

Many of the functions of management may be restated in terms of communication concepts: Planning by staff specialists involves an interchange of ideas if co-ordinated plans are to result. Directing inherently consists of telling subordinates what to do. Organizing provides a framework, or structure, for the transmission of information. And control is essentially a process of communicating the nature of results back to the source so that corrective action can be taken if necessary.

Recent research by psychologists, sociologists, social anthropologists, and organization specialists offers new evidence on such topics as possible communication networks, the importance of spontaneous action and personal feeling in effective communication, the role of status and cultural patterns, and the effect of the hierarchy on the vertical flow of information.[1] The results of these experiments furnish a good source for the formulation of hypotheses, but they often do not have direct application in an actual business situation. While findings of research conducted in business firms by this observer tend to be consistent with some of the results of work by behavioral scientists, several ideas in actual use have been identified which have apparently not been studied adequately by management specialists.

STATEMENT OF PURPOSE

The objective of this note is to emphasize three facets of the flow of communication within an organization, with the hope that they will receive more adequate recognition in organization theory. First, bilateral relationships—for example, vis-à-vis conversation between executives—are still the chief means by which

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[1] Representative of the literature on this subject are the following: Harold J. Leavitt, *Managerial Psychology*, Chicago, University of Chicago Press, 1958; Charles E. Redfield, *Communication in Management*, New York, Harper & Brothers, 1950; Keith Davis, "Management Communication and the Grapevine," *Harvard Business Review*, Sept.-Oct., 1953; A. P. Hare, E. F. Borgatta, and Robert Bales, *Small Groups: Studies in Social Interaction*, New York, Knopf, 1955; C. I. Barnard, "Functions and Pathology of Status Systems in Formal Organizations," *Organization and Management*, Cambridge, Mass., Harvard University Press, 1948; L. Festinger, "Informal Social Communications," *Psychological Review*, 1950, p. 271-82; H. A. Simon, *Administrative Behavior*, New York, The Macmillan Co., 1955.

actions are directed and controlled, notwithstanding the academic emphasis on committees and written memoranda. Second, lines of authority and channels for communication, since they are not the same thing, should not be confused: lines of authority are usually vertical, but channels of communication include also horizontal relationships. Third, the feedback concept, which is so vital to information theory and mechanical controls, can, with modification, also be of value in improving techniques of *human* direction and control in an organization.[2]

"AUTOMATIC HORIZONTAL COMMUNICATION"

Observation of communications in several firms leads to a tentative hypothesis relating to these three facets of the communication flow. We shall call this idea "automatic horizontal communication." Communication in this context means the exchange of information and understanding among persons. Horizontal refers to the lateral relationships among executives on the same organizational level of authority. And the word automatic refers to the habitual, routine, and spontaneous reaction of managers to a problem situation. The hypothesis is essentially this— automatic horizontal communication is one technique by which subordinate executives arrive at decisions informally and spontaneously, thereby relieving top line executives not only from making some decisions but also from consciously structuring the decision-making pattern for lower level managers.

The process of decentralization and delegation of authority as described so frequently in the literature involves pushing the decision-making process down to lower levels by conscious acts of the higher executives. "Automatic horizontal communication," on the other hand, suggests that subordinates make decisions without a formal or conscious act on the part of higher executives. In this automatic process, many decisions are made and action is carried out without the exertion of initiative on the part of top executives.

R. A. Gordon has identified two types of decisions—those by initiation and those by approval.[3] The former type includes all decisions in which the decider personally formulates alternatives and chooses courses of action. The latter type— those that result from the reports and detailed analyses of subordinates—are merely approved by the superior. Both of these types of decisions are made consciously by the superior. However, many decisions in business are arrived at jointly by subordinates and they receive no conscious attention by superiors. In fact, it is often true that no one may be aware that he is a part of the process that results in a choice among alternatives. This kind of automatic horizontal communication enables these unconscious choices to be made without action by the superior or by any single subordinate. Choices result instead from a mutual understanding of the facts by subordinates through the spontaneous flow of communication horizontally in the organization.

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[2] See H. A. Simon, "On the Application of Servomechanism Theory in the Study of Production Control," *Econometrica*, April, 1952, p. 48.

[3] Robert A. Gordon, *Business Leadership in the Large Corporation*, Washington, Brookings Institution, 1945, pp. 49–50.

As a firm becomes larger, its communications requirements become more complex and exacting. Continual study by management is required to determine just what changes in the loci of decisions must be made. Policy statements are issued and an increased emphasis on formal organization results. Conscious delegation of authority becomes increasingly necessary. In this growing and dynamic situation management uses the available means for formally pushing authority for decision-making to lower levels. In practice the situation is changing constantly, so that the formal recognition of these needs for delegation and improved communications lags behind new developments. In the gap between the actual needs for changing communication channels and the recognition of these needs by management, automatic horizontal communication tends to serve as an important and necessary process by which a firm continues to be able to adapt to new situations.

Barnard has emphasized that an essential characteristic of an effective executive involves the ability to decide when not to make a decision and the ability to know which decisions others should make.[4] If the executive decides to refer the problem to his superior, he will further aid the superior if he predetermines the facts and plans of others on his level so that he can present alternatives to his superior which will be consistent with the actions of managers at his own level. At this stage automatic horizontal communication becomes an effective means by which co-ordination is maintained without further overloading the superior with vertical communications to his own and other subordinates. In fact, in an efficient organization many matters are not referred to higher levels for decision but are actually informally and routinely handled by means of direct face-to-face contacts among functional specialists, and later merely reported to, and promulgated by, higher levels.

WORKS LIKE RELAYS IN A TELEPHONE EXCHANGE

The process of automatic horizontal communication operates like electronic relays in a telephone exchange. If there is a number of possible lines which can be used, each line is tried successively until the desired line which is not busy is found. Each executive is expected to check his proposals constantly with the actual performance and plans of each other executive on his level in order to maintain co-ordination. Only in cases in which this process becomes overloaded or for some other reason breaks down does the superior (by using the exception principle) need to handle the matter through vertical channels of communication.

Committees often handle this job of searching for consistent actions among executives operating on the same level. However, the more subtle technique is equally as effective but not as obvious—automatic verbal *ad hoc* communications among executives, generally taken two at a time. Organization theory necessarily

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[4] Chester I. Barnard, *The Functions of the Executive*, Cambridge, Mass., Harvard University Press, 1948, p. 194.

assumes such direct contact between two executives, but too often it treats them informally and even haphazardly.[5] A more detailed analysis would enable management specialists to understand the proper place and role of these contacts and, possibly, to develop models which will make them more dependable and efficient.

COMMUNICATION IN A RAILROAD FIRM—DIRECT AND AUTOMATIC

Some techniques observed in actual organizations illustrate the means for implementing this communication hypothesis. One firm in the railroad industry, which utilized a formal organizational structure, maintained an additional private branch exchange telephone system.[6] Any executive could dial another directly without clearing through a secretary, assistant, or other intermediary. Each executive was encouraged to seek information directly from the basic source rather than channeling communications through the formal hierarchy. It was felt that the information obtained in this manner was both more accurate and more timely. Further advantages were that the need for group meetings was reduced and only the essential, pertinent information was transmitted. Moreover, only persons directly affected had to become involved in the communication net. After two executives had talked over a problem by telephone, each often checked directly with another executive. In most cases these calls were between executives of the same status and on the same level of the organization. In this type of communication the authority structure was not directly involved—the most direct source of accurate information was emphasized.

At times, plans that were in the process of being made by two executives tended to change plans which had previously been made by other executives. In such situations each executive found it necessary to compare the new current understanding with the past understanding that he had had with others and to call the others back to correct earlier information and earlier plans. If this link in the process did not function, the "automatic" correction broke down and the matter required attention by the superior at the next higher level.[7]

If the functional specialists on the same organizational level were not continually aware of their interdependence and the importance of their spontaneous co-operation, the process also broke down and action was demanded through the vertical authority structure. If unnecessary calls were made through the private exchange, the executives found their time unnecessarily occupied with such communication. Even with such disadvantages, the company found that there was less need for

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[5] Mary Parker Follett *emphasized* direct contact in *Dynamic Administration,* edited by H. C. Metcalf and L. Urwick, New York, Harper & Brothers, 1942.

[6] This firm's operations were relatively stable—few sudden changes were experienced.

[7] See Arnold Tustin, "Feedback," *Scientific American,* Sept., 1952, p. 48, for an explanation of the mechanical and electrical usage of the term feedback, an essential of automatic controls. The usage of automatic here, of course, is only analogous to the engineering usage.

time-consuming committee meetings and less need for large numbers of written reports not directly related to the specific problems of a given executive.

"AUTOMATIC DECISION-MAKING" IN AN OIL FIRM

In an oil firm, direction was exercised by a dominating chief executive, who had built the company from its beginning.[8] He opposed the use of organizational charts and preferred direct contact with as many subordinates as appeared necessary in a given decision. He attempted to use a broad span of control, which resulted in a communications bottleneck at the top. Policies were not in writing; yet the subordinates were aware of common guides to action developed in the past by the chief executive.

In such a situation it is interesting that subordinates, upon failure to gain access to the chief executive, developed a process similar to what we have called automatic horizontal communication. Since a decision had to be made, the subordinates often checked parts of a proposal with specialists and spontaneously handled the situation without ever getting a definite decision from the chief executive and, it should be noted, *without any single person assuming authority that he did not have.* Literally, the matter was handled by the co-operative, joint action of persons who had worked together for a number of years and who thus tended to know the probable reactions of one another.

CONCLUSION

Many obviously well-co-ordinated organizations achieve success in spite of their disregard for the bulk of established organizational concepts. This is undoubtedly because of the subtle, unplanned, and often unconscious use of some type of automatic horizontal communication. It would seem that organization theory might advantageously recognize this process and allow for its use in a rationally planned conceptual framework of communications.

At the present stage of these observations, it appears safe to state that it is possible to develop a communications system among executives on the same level of an organization which would tend to operate as an *automatic* control in the sense that corrective action is taken spontaneously—without the aid of formal or consciously arrived-at decisions—whenever actual performance deviates significantly from some predetermined criterion, or decision rule.

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[8] This firm's operations were subject to rapid change. The firm had grown at an exceptionally fast rate.
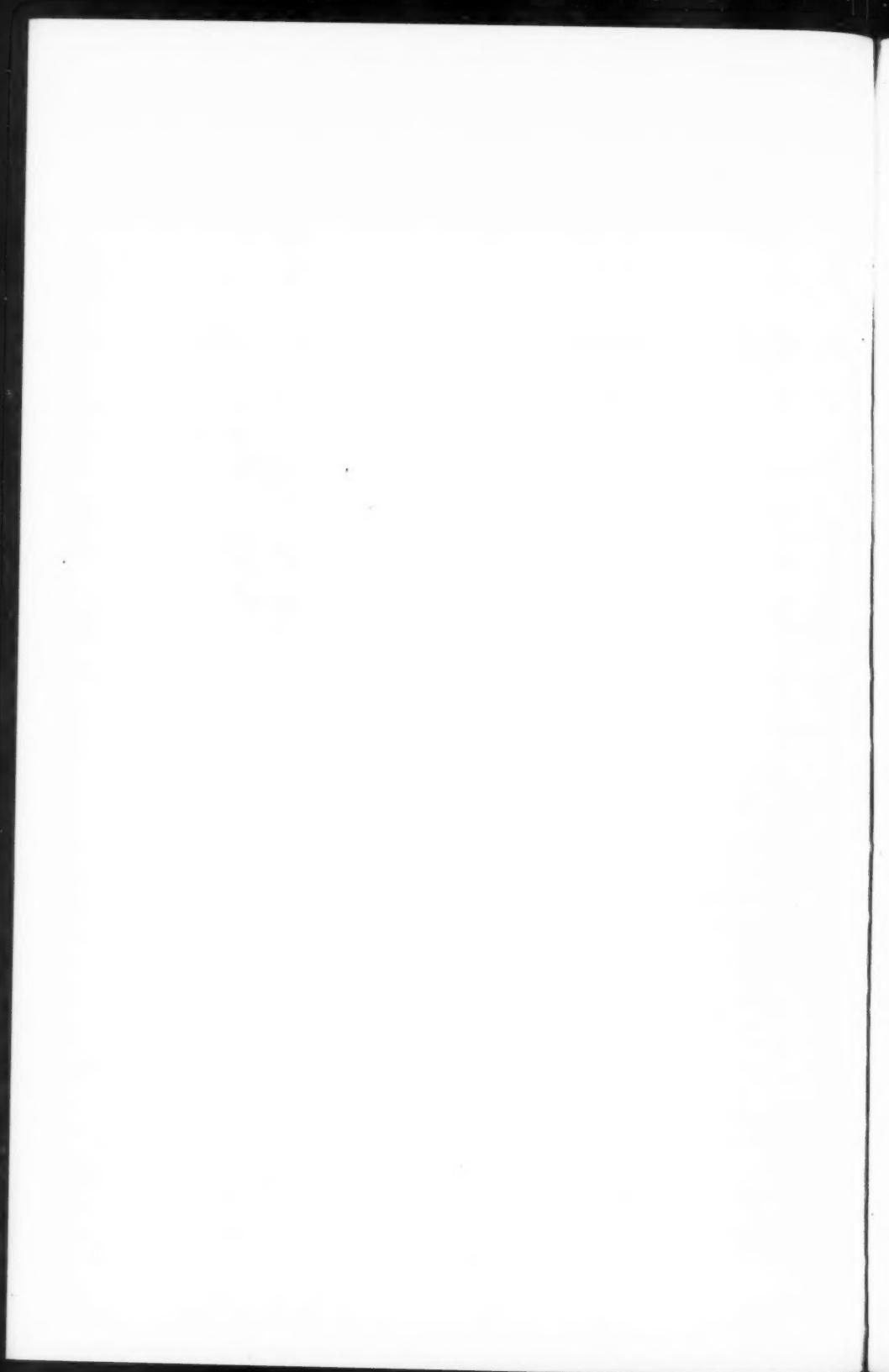
Evolving a Business Philosophy

MANLEY H. JONES

Illinois Institute of Technology

INTRODUCTION

Each businessman doubtless has a philosophy he uses in making his decisions. The ideas he incorporates in his philosophy may appear heterogeneous and in some cases inconsistent, but they are still parts of his philosophy. He may not realize he has one, for he picks up the bits of wisdom he lives by over an extended period and from many sources. In fact, the thoughts that make up his philosophy usually rest in the unconscious levels of his mind and he employs them unconsciously. They are embedded in his thinking patterns, used habitually.

In view of what has been said, it would be asking too much to expect a man to change suddenly to a new philosophy, even though he is convinced it is the very best he can find. Adopting and habitually using a new philosophy of management and thus changing the ingrained thinking patterns of a lifetime call for heroic self-discipline.

Nevertheless, many of us would like to experiment with recasting our business philosophies. We hope that as a result of this re-thinking we can discover a more workable and orderly combination of ideas and that we shall thus be able to channel our decision-making more tellingly.

A BOSTONIAN'S BUSINESS PHILOSOPHY

As I look back, I realize that I was introduced to the idea of a philosophy for executives in my first job after leaving graduate school. My boss was the sales manager of an old New England firm, and a proper Bostonian. During the fifteen years I worked with him, he managed to teach me the desirability of making management decisions according to a moral code. Our offices overlooked the Boston Common, and we would often sit watching the people and the pigeons while we argued about how we should solve a problem we faced.

Inevitably, his decisions ultimately turned on the question of fairness. His touchstone, his moral tenet, was a simple one: "We should treat everybody alike," a moral code that goes back to Plato's ideas of justice and virtue and to Christ's Sermon on the Mount. He insisted that we choose an alternative which would yield equal advantages to all customers, or yield equal advantages to all employees, and that our solution be fair to the company as well as to them.

At that time—in the late 1920's—the business heroes of early generations were beginning to lose their haloes. Biographers and historians were charging that men

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like Jay Gould, Cornelius and William Henry Vanderbilt, John D. Rockefeller, and Leland Stanford had flouted many of the moral codes of the public—that instead of helping their fellow men, these men were driven by self-interest in their business dealings, driven by a hunger for personal power and wealth.

To my boss, a shady decision or a dishonest act was revolting. But what I want to emphasize is this: he had the will and the moral and intellectual integrity to hew strictly to his code. His tenets provided him with an ever-present guide in making decisions. Equally important, his decisions stood up quite well when they were viewed in retrospect.

People who like to read about philosophy will recognize that this concept of fairness is an example of a philosophical idea from the branch known as ethics. Most philosophers agree that the rightness or wrongness of an act is important and that the rightness or wrongness should be judged by its actual or expected effects of good or ill on others. And I imagine most executives and laymen will agree that a businessman should employ ethical tenets in his business dealings. Nevertheless, I am not going to propose that men use moral codes as their only source of ideas for their philosophy for management. The trouble is that these precepts frequently become merely a collection of platitudes or noble sentiments. In practice a man tends to forget them, conveniently, whenever they interfere with his own interests— and they frequently do. Not every one has the moral fortitude of my old boss.

METAPHYSICS OFFERS GUIDES TO BUSINESS BEHAVIOR

Instead, I propose that we draw from a second branch of philosophy—the one known as metaphysics. I gather that men like Aristotle, Socrates, Hegel, Kant, Marx, and Whitehead would be classified as metaphysicians. They were all attempting to see the fundamental motives and behavior of human beings—to see what they called truth and reality. Then, once this was done, they tried to conceive a realistic framework which would envelop all the knowledge and insights they had accumulated, and would make clear the cause-result relationships among these insights. In these pages I make no attempt to demonstrate that I am a second Socrates. Actually, I am for the present interested in only two of the concepts from metaphysics: first, the idea of a body of guides for behavior, for decision making; and, second, the idea of a framework to encompass these guides, one which would show their consistency and relationships and thus give each guide added meaning.

If a man has no framework, he must depend for guidance in making decisions on relatively unsophisticated exhortations, such as those of my first boss—"Do unto others. . . ," for example, or on hit-or-miss how-to-do-it lists such as "Ten Rules for Becoming a Successful Executive."

In business we need a much more fully thought-out and a much more dependable philosophical pattern. And equally important, it should be one that we will not be tempted to ignore most of the time, simply because it frequently tells us to make decisions that will injure us. We need a philosophy we can be proud of and one that will challenge us. But we also want one we can use every day in making

all our decisions, one in which the conflicts between what we *think* we *should* do (the oughts) and what we *actually* do are kept at a bearable level. A mark of a mature person is a willingness to set goals that are somewhere within his reach.

BUSINESS GOALS AND THEIR MEANS AS GUIDES TO DECISION-MAKING

The framework I am proposing as a container for our guides for decision-making consists of two main ideas—first, the idea of goals, the idea of big, long-term, permanent goals or objectives; and, second, the idea of sets of means of achieving them—means that are compatible with one another. But the two-phase framework tells us nothing about the content of the framework. Each man who aspires to a philosophy must himself choose the elements he wishes to include in it—his own goals and his own ideas of the means that are best for him.

LONG-TERM PROFIT OR SOME OTHER GOAL?

Let us nevertheless examine some long-term goals which might be included in a philosophy for management—in any businessman's philosophy. What *is* a proper permanent goal? Here we immediately enter a controversial area. Is it to maximize the company's prifits in the long run? Businessmen usually say this is the objective. And economists assume this is the businessman's goal, especially those who work with the concepts contained in the theory of the firm—the static equilibrium concepts.

But most of us who have been in business or who have worked closely with management are not so sure that long-term profit is the main goal that management actually seeks, in spite of what many businessmen and economists say. Some of us are of the opinion that the main goals of management are to raise the company's prestige and ensure its future welfare and that profits are simply one among several means of attaining these goals.

Still others may urge that instead of using the notion of high profits or long and fruitful life for the company, businessmen might turn to ethical or moral values for suggestions as to their big goals. For instance, should it not be management's goal to further the general welfare, or, more broadly stated, to help mankind, to help emancipate mankind from cruelty, ignorance, hunger, and pain, or to increase all human satisfactions by providing men with cultural advantages as well as material goods?

While these ideals are worthy objectives, it seems to me they are much too grandiose. Can we really expect a businessman, or any one else for that matter, to make decisions with a view to helping people in general—all people over the world, or even all people in the United States? This goal seems too vague; we cannot visualize these distant people in our minds.

Let us, then, narrow the circle of beneficiaries, narrow it drastically, and see what happens. Maybe this procedure will provide us, as businessmen, with ideas

for a concrete and an appropriate philosophy. What about testing each tentative decision—each important one—to foresee the good or ill effects it will have on the groups which will be directly affected by our decision: the company's customers, its factory and office workers, its sales force, its research men, its executives, its stockholders, and, of course, the company as a whole. (These moral codes keep popping up despite our valiant attempts to submerge them.)

To me, the long-term goal of furthering the welfare of these groups makes much more sense than the goals of high profits or helping mankind in general. We have no trouble seeing this happen—seeing management doing this. Equally important, furthering the welfare of these groups is an effective method of ensuring the company's future welfare—of making sure of its prestige and long life. We can readily visualize a good executive conscientiously trying to achieve such goals; he knows that he needs the active help of all these groups.

FURTHERING THE WELFARE OF THE COMMUNITY

But perhaps we have reduced management's goals too drastically—from one extreme, all mankind, to the other, the groups in the company. What would happen if we were to enlarge the circumference to include the people in the company's town—its community? I ask about this because, as Alfred North Whitehead, the philosopher, explains,[1] "The behavior of a community is largely dominated by the business mind. A great society is one in which its businessmen think greatly of their functions. Low thoughts mean low behavior, and after a brief orgy of exploitation, low behavior means a descending standard of life." And I may add that, in my own opinion, a great person, a great executive, is a person who actively participates in the development and the fulfillment of the potential of the greatest number of people.

Although some may think that even this comparatively small goal of furthering the welfare of the people who are closely associated with the company, including the community, is too idealistic, I do not. I believe it is well within the ability of most businessmen and that it is a goal a majority of businessmen quite naturally want to achieve. It falls comfortably into his habitual pattern of thinking. To me, this third goal seems much more realistic than the first two goals mentioned, maximizing profits or aiding mankind. Nevertheless, I am sure that there is wide disagreement as to which of these three big, permanent goals is the most appropriate for management. And these three examples by no means exhaust the list of possible major goals. Each executive will choose the one or ones he thinks would suit him best.

CHOOSING THE MEANS

We are now ready to choose the content of the *second* facet of our framework— the sets of means of achieving our big goal. A man may employ any one of hundreds of possible means. In appraising many of these we encounter even

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[1] See Chapter 6 of *Adventures in Ideas*, New York, The Macmillan Company, 1933.

greater clashes of opinion than in the decision about management's permanent goals.

Probably the greatest controversy revolves around the role that government should play. Should it play a minimal role or a larger role in furthering peoples' welfare? Our individual answers will probably be strongly conditioned by the social, political, and economic philosophies held by our parents. Here we are choosing between *laissez faire,* which includes the idea now often referred to as the free enterprise system, on the one hand, and, on the other, utilizing the government to help us solve many of the country's big problems. In other words, is it better to employ what is known as Adam Smith's philosophy—allow the businessman to seek his own best interests with a minimum of governmental interference because in this way he will automatically further the welfare of the nation and its citizens—or should we follow the economic and political philosophy adopted during recent decades by a majority of the Democratic Party and some segments of the Republican Party? And how far do we want the government to go? Since each of us has long since made up his mind about which of these two means to adopt, we shall pass over this controversy.

THE PHILOSOPHY OF CHANGE

Finally, let us explore a second set of means—out of the hundreds of possible means of achieving management's long-term goals—namely, the introduction of changes in the company's practices and activities.

Should we follow the policy of adopting few changes, or many changes? These two opposite sets of means have become increasingly fascinating to me during the past few years. I have frequently noticed that in one company the executives—as a group—will tend to follow regular, almost routine practices, whereas the management in another company is constantly introducing changes. I am sure that many companies fall between these two poles and I would be the last to claim that these are necessarily either-or philosophies. My purpose here is not to determine what proportion of the companies in the world follow each of these two philosophies, but to determine which of the two an executive should adopt.

I have known several companies whose managers felt they needed to introduce virtually no changes. The younger as well as the older executives behaved as though they were members of a rather exclusive and quite comfortable club. In other companies, on the other hand, the executives I have worked with have used the opposite philosophy, usually spending most of their time questioning, re-appraising, conceiving new solutions. They were bent on creating ideas for new means for furthering the welfare of the company and its members.

Accompanying each of these two opposing management philosophies the following additional dichotomous rules and practices will frequently be observed: Cut expenses and save money as a means of achieving the company's goals versus spend money to further the company's welfare; ensure the welfare of the founding family and thus maintain its prestige versus introduce vigorous new management and expand the company's activities; give the customers only what they are strictly

entitled to versus customer-oriented and sales-oriented policies; maintain a high level of workmanship in the products but continue producing mostly the same products versus the practice of changing the company's products and trying to improve their design.

In the companies whose managements fall into the first-named classification—those we might label conservatively run companies—the young men usually wait for their elders to retire; the training program is, in effect, an apprentice system.

In the second type of company, top management ordinarily keeps many balls in the air simultaneously. In some firms, the executives *deliberately* conceive and pose problems. This practice is designed not only to find improved means of furthering the company's welfare but to challenge the younger executives, give them varied experience, and keep them from falling into ruts and becoming bored. What I have just described are two internally consistent but opposing sets of means.

GEOGRAPHICAL DIFFERENCES IN BUSINESS PHILOSOPHY

During my years in New England I became acquainted with many companies which employed the former conservative pattern of means, and relatively few which employed the latter philosophy of change. In Italy I also frequently encountered this first-named pattern in the management of the companies I became acquainted with during my stay there two years ago. And from what I learned from the friends I recently made among British men during two months of close association with them, I believe the first-named conservative pattern accurately describes also a great many of the British firms.

The means typically employed by managers I am acqainted with in the Middle-west presents a quite striking contrast. In these states there are plenty of conservatively run companies, but I think I find here a much larger percentage of firms on the move—firms which constantly change their activities. The difference in business philosophy is marked.

It could be argued that the conservatively managed firms follow routine practices because they are relatively poor and therefore dare not take a chance. I am not entirely content with this explanation. I have noticed on several occasions that less-conservatively managed companies which have found themselves in trouble have managed to shift to new and more promising programs even though their financial reserves were small. The companies with the conservative management philosophy, in contrast, have usually tried to make-do; they have labored mightily, but have eventually dried up.

SUMMARY

The philosophy for management which I have advocated here can be stated quite briefly: Set as a goal the furthering of the welfare of the company, its member groups, and its community—and use the philosophy of change as the dominant means of achieving that goal.

Computer Developments in
the Soviet Union

MARY E. MURPHY

Los Angeles State College

INTRODUCTION

A recent research project, which investigated the decentralization program introduced by the USSR in the year 1957, uncovered material on computer development behind the Iron Curtain. This paper summarizes existing material. It should be noted, however, that a serious difficulty attends any scholar of Russian affairs, because abstracting services comparable with Russian facilities in science and mathematics are not available in the U.S.A. Few Russian works on computer development—and indeed in the management sciences generally—have been translated into English.

Early in 1956 a Ministry of Automation was created in the Soviet Union, one indication of the importance accorded to automation by planners. Soviet computers bear the names BESM and Strela (machines of large size); and Ural and M-2 and M-3 (machines of smaller size). The following Soviet scientists are engaged in computing and programming business and economic data: Panov, ÎAnov, Liapunov, Markov, Kitov, Kantorovich, Lebedev, Maĭorov, and Korolev. Their work was reviewed in a course in Artificial Intelligence and Digital Computer Programming scheduled by the University of Michigan in the summer of 1958. Translations of recent Soviet papers and portions of Soviet books were made available to those in attendance. Lectures were also offered on recent Soviet advances in linear programming and Monte Carlo procedures and on a comparison of performance abilities of Russian computers in solving problems formulated by Soviet mathematicians. Possibly this is the only American course in which attention is directed to Russian developments in these fields. A volume on automation [1] refers to experience gained in Russian automated factories from 1954 to 1956. This included the following:

1. Division of labor and the skills required for the automation of production processes.
2. Organization of work and the skill levels of key workers in factories using automated equipment.
3. Organization of the work and skill standards for auxiliary workers in such factories.
4. Alteration in the division of labor and in the skills of workers in such factories.

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[1] By A. I. Katsenelinboĭgen, Moscow, 1956; no English translation.

5. Alteration in the division of labor and in the skills of workers on specific automated production processes.

6. Instruction and advanced instruction of workers responsible for operating automatic equipment.

7. Establishment of wage scales in automated production processes.

The plants referred to by this writer included the Molotov Motor Car factory at Gorky; the Kaganovitch ball-bearing factory in Moscow; a ball-bearing plant in Kuibyshev; the Stankonormal machine-tool factory; and the Calibre and Freser machine-tool plants in Moscow.

A SOVIET AUTOMATIC PISTON FACTORY

The Experimental Machine Tool Research Institute in Moscow sponsored the co-operative efforts of several scientific establishments, various plants, and numerous engineers and workers to bring into being the first automatic piston manufacturing factory in the USSR. The first section of the plant includes an electric melting-furnace, a batching device and casting machine, and an annealing furnace. This foundry section is linked to the machining section, which includes automatic turning, drilling, milling, and grinding machines, by means of an intermediate storage hopper through which the castings pass when the sections of the factory are operated simultaneously. However, the foundry section operates all three shifts and seven days a week, whereas the machining section works only two shifts and six days a week. When this latter section is not operating, the hopper stores the castings in readiness for the machining operation. The hoppers installed between sections also obviate the need to shut down the whole process if something goes wrong in one section.

After leaving the "machine shop," the pistons move on to various other processes, including sorting, labeling, and packing. The only human inspection is made between the foundry and the machine shop at a point where one person inspects the castings for faults such as blowholes, tears, or cracks. The hardness of the castings is checked by an automatic process.

The plant's complex nervous system has 50 kilometers of electric wiring (under the floor), 100 electric motors, and more than 1,500 switches, contactors, relays, and other electrical devices. The casting, annealing, machining, and chemical processes are all automatically controlled in one interlinked process. Special devices find trouble spots immediately, and the engineer at the control panel learns of the difficulty at the same time as the operator. The plant can be switched from automatic control to local adjustment control by special push-buttons.

The Russians argue that laborers in the usual sense of the word are not to be found in this plant. Workers must learn how to handle many tools and they must have a good knowledge of engineering in order to work in this particular company. It is claimed by one writer [2] that "the Socialist method of production plus automa-

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[2] Arkadiĭ Erivanskiĭ—see Bibliography at the conclusion of this paper.

tion breaks down the age-old barrier between the work of the laborer and that of the intellectual—between physical labor and 'white-collar' work."

Russia, then, has one of the most highly developed automatic piston lines in the world. As described above, there is complete automation from the aluminum billet to the finished, matched, and packaged production. It is claimed that nine men per shift produce 3,500 piston heads daily, enough for the entire Soviet light-car industry.

RUSSIAN TRACTOR AND BEARING PLANTS

In Minsk, a tractor plant uses a series of automatic transfer machines, and a Moscow bearing plant has secured automatic control in the production of bearing races by adding to existing machines and mechanizing the handling. It is claimed that the reorganization of this factory has increased machine utilization by 25% and has brought a corresponding rise in output. Moreover, the reduction in the number of operators has cut man-hours by 27% for a given output. It is contended that, although wages rose, production costs were reduced by nearly 10%.

Russia's first automatic line was introduced in 1946 at the Kharkov tractor factory. It consisted of 14 automatic machines, which reduced from 58 to 2 the number of workers required for the production of cylinder heads. In 1953, at a Moscow Engineering Conference, a description was given of 40 electronically controlled automatic lines, which were at that time operating in the Soviet automobile, tractor, and bearing manufacturing industries.

An automatic line at the J. V. Stalin Combine plant can make 180 meters of link-chain for steel strips each hour. Automatic features are said to have released 100 workers from other jobs and to have saved 15,000 square meters of production space as well as "dozens of machines." The USSR Ministry of Machine Building plans to set up 12 other automatic lines in various machinery plants. A Soviet economic specialist in 1957 indicated that automation was being applied with determination in industry and that it would be speeded up 30% in the following year.

AN AMERICAN ENGINEER APPRAISES SOVIET AUTOMATION

Nevin L. Bean, Technical Assistant to the General Manufacturing Manager, Automatic Transmission Operation, Ford Motor Company, was one of three American engineers who visited the Soviet Union in December 1955. He spent some time at the Kaganovich Ball Bearing plant, which has a fully automatic production line and started operation in 1952 following four years of preparation. The Russian factory director indicated to Mr. Bean in December, 1955 that 30 more automatic production lines would be built at the plant in the next three to five years. It was claimed that there had been a 70% rise in production and almost a 60% increase in man-hour output since the time automation was installed. All sizes of bearings are produced at this plant by 12,000 workers, of whom 50% are women.

Bean reports that the Russians are no longer building manual production machines if automated lines can be made. "If plans we saw are carried out," he stated, "Russian factories will have the machinery and techniques to make giant production strides within the next five years. Within ten years many of their production facilities and techniques may be superior to ours unless a new emphasis is placed on automated production designing in the U.S.A."

On a tour of the Experimental Scientific Research Institute For Metal Cutting Machine Tools, Bean was told that plans call for the use of automatic transfer machines.

At this same Institute Bean was shown an automatic balancing machine designed to balance an electric motor armature. This machine determines the area of unbalance, then automatically sets into motion cutting heads which cut out just enough metal to correct the unbalance while the armature is being cycled through the machine. He also saw many tracer-type lathes, both vertical and horizontal, boring mills of various sizes, and an application of electrolytic erosion as a process for forming metal.

THREE MAIN LINES OF INVESTIGATION

At another Russian organization, the Institute of Auto-Mechanics and Tele-mechanics, work is being done on three main lines of investigation, namely, general theoretical problems; the theory of digital systems; and the automation of industrial processes.

Under the heading of theoretical problems, the Russians are studying high-speed devices, instrument precision, and impulse-type systems. The second section, on digital systems, is working on a theory of relays. This includes application to measurement and control systems and work on pneumatic, hydraulic, and electrical systems. The section on automation is on a consulting basis, carrying out work for factories upon request.

RUSSIAN COMPUTERS—TYPES AND CAPACITIES

The BESM computer is in use at the Institute of Precision Mechanics and Calculating Technology. This large-scale computer is a three-address machine with a floating decimal point. It carries five bits of information for command purposes and numbers up to 11 digits. It operates 24 hours per day at about 72% efficiency: test time amounts to about 20% and error loss, 8%. It averages 7,000 to 8,000 arithmetic processes per second, while an experienced worker can do only about 2,000 a day with an ordinary office adding machine. It is supposed to have a production equivalent of about 12,000 human operators. The Russians claim that BESM solved a problem containing 800 equations and calling for 250 million arithmetical processes in less than 20 hours. It is also capable of translating in several languages.

The Sixth Five-Year Plan of the USSR (1956 to 1960) was devoted to hydroelectricity, automation, petroleum, atomic energy, and textiles. It was revised in 1956 and scrapped in September, 1957, being replaced by a Seven-Year Plan covering the period 1958 to 1965. Automation plays a large part in this Seven-Year program. Under Russia's planned economy, electronic machines would seem to be essential for economic calculations. To date, however, Russia has not manufactured special-purpose machines for economic calculations and, until recently, general-purpose computers were not used for this purpose. In 1957 research was carried out concerning the use of electronic computers in calculating tables of inter-branch relationships. This research into the area of integrated data processing was the responsibility of the USSR Academy of Sciences Laboratory of Management Machines and Systems.

The official publication of the Soviet Machine-building industry, the *Hearld of Machine-Building—Vestnik Mashinostroeniia*, indicates that Khrushchev has recently emphasized that management of the Russian business economy "was unthinkable without a unified centralized system of accounting and statistics." He demanded wide "mechanization of accounting, based on machine-calculating stations co-ordinated at offices of the Central Bureau of Statistics." These stations are to be equipped with high-speed general-purpose calculating machines capable of doing the business accounting that is at present carried out by punched-card systems.

A Russian trade paper recently stated that "computers at machine-calculating stations work only about five hours a day." This idle time is a problem at existing offices. Ways of finding more work for high-speed machines are being explored and developed. It would appear that the trend today is to enlist the machine accounting centers to keep constant check on the flow of factory production, to prepare estimates for planning departments, and to perform all kinds of highly complicated engineering computations.

An electronic computer of the UNIVAC type has been developed in Moscow to do automatic translation of scientific texts from English into Russian. This is named VESM. It performs an adding operation in three microseconds and in a few hours can complete involved computations which otherwise would require years of time by an experienced mathematician. The VESM is reported to have been used to compile, within a few days, an international astronomical calendar giving the positions that 700 small planets of the solar system will occupy every 40 days for 10 years ahead. For the Russian geodesic survey it, too, solved problems with 800 equations, requiring 250 million arithmetical calculations, in less than 20 hours.

Another Russian electronic computer is called the CRYSTAL. It can perform 200 arithmetical operations per second, and is highly useful for mathematical estimates in the field of crystallography. Another computer, WEATHER, is designed to calculate long-range weather forecasts. These high-speed computers are said to compare favorably with the best Western machines. However, the demand for them is running far ahead of the current supply, with universities and research institutes urged to combine efforts to produce the computers they require.

Russian authorities contend in published articles that automation greatly increases labor efficiency, and leaves to the worker only highly proficient control of

complex machinery. In the end, this trend will shorten the working day and give workers opportunities for all-round development of their capacities. At least this is the argument advanced by the Soviet press.

AN INTERNATIONAL CONFERENCE DISCUSSES THE IMPLICATIONS OF AUTOMATION

The 40th Session of the International Labor Conference, held in Geneva in June of 1957 and attended by delegates from 73 member countries, discussed the social implications of automation and other recent technological innovations. The Director-General of the Conference stressed that automation and related developments have a direct and immediate impact on wages and hours, and on other conditions of work and job satisfaction. Automation touches directly on the central area of labor-management relations, thus having serious repercussions for management, trade unions, and governments, and imposing on each of them new responsibilities.

The implications of automation are different for countries in which business enterprises and trade unions are free as compared with those in which they are State-controlled. Delegates at the Geneva meeting from Europe and North America and from certain parts of the British Commonwealth emphasized that the introduction of automation in a buoyant economy provided opportunities for all. Some fears were also expressed—generally in connection with technological unemployment—but most representatives believed the fears were unwarranted and would be overcome with frank discussion.

Delegates from USSR and other Eastern European Socialist countries emphasized the particular nature of the consequences of automation in their countries. New opportunities for employment were created, and the recurrent problem was the shortage of manpower for economic development. Even in these economies, however, automation did not proceed without difficulties, according to the testimony of Czechoslovak Employers' delegates. Manpower redistribution, skill development, management improvement, and the willingness of the individual to adopt a positive attitude toward changing situations raised problems in the Iron Curtain countries just as they have elsewhere. These problems will require analysis and solution as the pace of technology continues to advance.

Delegates from under-developed countries at the ILO Conference voiced the opinion that automation will present advantages to them in the long run, but that several serious short-term implications must be solved. The older industrial countries, with the competitive advantage and the tremendous market pressures provided by automation, may move ahead faster than ever, leaving the less-developed lands even further behind and endangering their shift from agriculture to industry. In addition, the under-developed countries may even be forced into a retreat from industrialization, with a consequent widening of the gap in relative wealth and living standards. There was fear that monopolistic concentrations of power would invade the under-developed countries and drive some of them entirely out of the manufacturing market.

Russia has passed on many of her technical skills to members of the Communist bloc. New plants in China, for instance, are on a par with Russia in styling, layout, design, and methodology. The organization and administration of these plants, their methods of accounting, the very terminology used are all Russian. The new Anshan steelworks in Communist China is almost exactly like the Magnitogorsk plant in the Soviet Union. The qualified observer wonders whether this is the most suitable set-up for China. Time must tell. But certainly it is apparent that Communist China has introduced as many phases of Russian automation as possible. And automation know-how has also been passed on to the European satellite countries.

CONCLUSION

Although each reader must, to some extent, form his own conclusions, it would appear from these and other materials that the USSR is at or near the forefront in the area of automation, just as it is in other scientific endeavors. The U.S.A. must, it is clear, make alterations in its educational patterns so as to hasten mathematical and scientific training and to install automatic processes wherever possible in American plants. The race between Russia and America is taking place in the industrial arena, and, in the long run, it is a race in which computers will play an increasingly decisive role.

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The Nature of Authority

MERTEN J. MANDEVILLE

University of Illinois

INTRODUCTION

Although a great deal has been written about the concept of authority, the subject seems to have become more and more confused with the passing of the years. Possibly this confusion stems from the tendency to impute new meanings to words, for our language is not a group of static symbols representing ideas, but takes on new connotations as old concepts are expanded and new ones are developed. However, this proliferation of meanings for a word often leads to inexact expressions of thought and to ambiguity in writing. This seems particularly to be the case in some of the recent literature concerning the nature of authority, for the term is now used in an entirely different context from that which was originally intended and from that which still appears in the dictionary.

It may be illuminating to examine the problem of authority in order to determine whether some current uses of the word have aided our understanding of organizations or have, conversely, beclouded the issue. The importance of determining exact meanings for authority will become apparent as the discussion proceeds. In addition, some light may be cast on our understanding of organization itself, for authority and organization are inextricably related.

The early writers on organization took authority for granted and had no doubt about its purposes, how it arose, or what it was. What they were usually concerned about was how authority passed from the one supreme source of control to the lower members of the organization. As Russell Robb wrote fifty years ago:

> We have too, from our earlier organizations, the examples of the value of *lines of authority*. They add to definiteness. They provide the control and direction by subdividing for that purpose. As authority tapers down, it relieves from responsibility except in the fields for which men are fitted. It provides a definite court of appeal in case of difficulty, and thus saves endless disputes and arguments and consequent confusion. This tapering authority never leaves affairs without a head, and it assures the steady progress of the undertaking because it provides a properly trained supply of new men to fill vacated superior positions." [1]

Erwin Schell later stated it in these words:

> If we are to have control, we must provide avenues through which it can function easily and directly. These avenues we speak of as the paths of authority. They pass from administrators who determine policy, to the executives who are responsible for the performance of the policy, and then to the employees who perform the actual operations." [2]

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[1] Russell Robb, *Lectures on Organization*, privately printed, 1910.
[2] Erwin Haskell Schell, *The Techniques of Executive Control*, New York, McGraw-Hill Book Co., 6th ed., 1946, p. 57.

In fact, the early students of management paid little attention to the subject of authority, for they were primarily concerned with the increased output of production and the methods which would bring this about. This necessarily included the development of effective forms of organization, the transmission of orders, specialization of work, techniques of production, and standards of performance.

The early thinkers on these subjects were almost exclusively engineers or those who at least had some engineering training or experience in production. They were concerned with tangible things and structures and had little understanding of psychic factors, although these were by no means unrecognized or omitted from consideration. Their purpose in writing on the subject of organization, however, was to develop and explain a framework through which more output could be achieved. The foregoing statement does not neglect the work of students who were also considering administrative organizations in the area of government or the military, for they were often the same men, and the rules which apply to organizations in one case are equally applicable to other types of productive effort, so long as these rules do not become overly refined and specialized.

Authority, then, from the point of view of the early students of management was a necessary component of organization and it arose through the very process of building and forming an organization.

The discussion which follows is not intended to rely upon any claim of the rights of priority of statement or upon the pronouncement of so-called authorities, for these may be fallible and it is not important in any event when or by whom a statement is made. What is attempted is an exploration into the realm of ideas and the use of words as a means of expressing meaning and clarifying thought.

It will be necessary to quote certain authors in this connection, and a great deal of reliance has been placed on Chester I. Barnard, for he is always a cogent writer and much of the prevalent idea concerning authority seems to have originated from his insistence on the importance of the assent of subordinates in authoritarian relationships.

No attempt will be made to exhaust the subject or to make reference to more authors than are required to trace the course of thought regarding the use of the word "authority," but the inquiry will necessaarily be somewhat long. Definitions are only arbitrary statements and are restrictive in that they may not include certain connotations and implications that are required for our study. However, for reasons of brevity several definitions will be considered, since the quoting of a definition is frequently the most appropriate way to express the idea which is intended to be conveyed. Great care will be taken to show the meanings intended and to avoid quoting passages out of context.

THE BEHAVIORISTS' CONCEPT OF AUTHORITY

The definition proposed by a recent writer, Daniel J. Duffy, is appropriate at this point for it summarizes quite well some current thought on the subject and contrasts the original concept of what constitutes authority with that which is

frequently expressed at the present time. His definition of the concept of authority is as follows:

> Authority is the relationship that exists between individuals when one accepts the directive of another as authoritative, that is, when the individual receiving the directive weighs the consequences of rejecting it and decides in favor of acceptance. The authoritative nature of the directive is confirmed when the person accepting the directive acts in accordance with it within the confines of his understanding and ability.[3]

Later Professor Duffy amplifies this definition by saying,

> It conceives of authority as arising from a decision of the part of the subordinate that results from weighing the various forces influencing acceptance and rejection. This weighing may not be conscious. It considers many factors and the weighing of these factors will probably be different at different times and places. Therefore, in a very real sense, only limited authority is possible.[4]

This author is, of course, expressing the familiar definition of the behavioral school of thought and, as he readily admits, this definition has limitations.

This is surely a different idea of what constitutes authority from that expressed by the terms "delegation of authority" and "lines of control." One can imagine the reaction Frederick W. Taylor would have had to such an idea of the nature of authority.[5] Although he was well aware that authority was frequently not accepted, it would have been unthinkable to him that the employee had a part in making a decision concerning authority. Acceptance of a decision is one thing, but whether this constitutes what we mean by authority is another. Although not always followed in practice, it is only common sense that orders should be given with discretion. And it was Taylor who insisted that "one should be sure, beyond the smallest doubt, that what is demanded of the men is entirely just and can surely be accomplished." [6]

"BILL, YOU ARE FIRED!"

Possibly a simple illustration will help to emphasize this point. There is an old joke that used to be repeated often in the shops. The story is of a dispute that occurred between a foreman and one of his men concerning an order that had been given. Finally, after the argument became heated, the foreman shouted, "Bill, you are fired!" Bill, not to be confounded, replied in an equivalent tone of voice, "You can't fire me, I quit!" It is quite obvious what happens to Bill. The question is whether authority exists, whether it is accepted, and what transpires in the situation. Bill disclaims any authority of the foreman over his actions, but his connection with the firm is nevertheless severed. Possibly his ego is strengthened and he may derive satisfaction from telling his friends, "That so-and-so can't tell *me* what to

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[3] Daniel J. Duffy, "Authority Considered from an Operational Point of View," *Journal of the Academy of Management,* Vol. 2, No. 3, Dec. 1959, p. 167.

[4] *Ibid.,* p. 175.

[5] Although Frederick Taylor did not seem to write on the subject of authority per se, his thoughts on its importance are clearly set forth in several of his publications. In the present instance, see particularly his lecture on "Success," published in *Bulletin of the Taylor Society,* Vol. XI, No. 2, April, 1926, p. 68 ff.

[6] Frederick W. Taylor, Shop Management, New York, Harper & Brother, 1919, p. 191.

do"; but his argument is recognized for what it is, mere sophistry. Whether the foreman has strengthened or weakened his own position with the other members of the group or with top management is another consideration that is beyond the question of whether an authoritarian relationship exists. It depends upon a number of other related and possibly unrelated circumstances that are beyond the scope of our investigation and should not be included in a consideration of the nature of authority. There may be much better ways of exercising one's authority or of firing a man, and there may be better human relations practices to bring about desired results. But these should not be confused with the question of where authority lies or where it is manifested in an organization.

Has there been an evolution in the meaning of the word "authority," and, if so, is the present usage more meaningful than the old? Or is it possible that new investigations have thrown more light on the functioning of organizations and thus expanded our understanding? Or are there other words that would express the thought better? To answer these questions, let us review some statements concerning authority to see if a pattern exists.

The original use of the term has already been given and need not be repeated at this point. While this review is not intended to be strictly chronological and makes no attempt at being exhaustive, it will try to emphasize certain events and writings which seem to have had more than casual influence on the connotation and use of the word "authority." The desire is for brevity rather than scholarly prolixity.

FOLLETT ON FUNCTIONAL AUTHORITY AND FUNCTIONAL RESPONSIBILITY

At a meeting of the Taylor Society in New York on December 10, 1926 Mary Parker Follett delivered a paper on "The Illusion of Final Authority," which was subtitled "Authority Must Be Functional And Functional Authority Carries With It Functional Responsibility." The whole paper is very well worth reading, but for our purpose only two short parts will be quoted. Her major contention may be summed up by the statement:

> This phrase "delegated authority" assumes that your chief executive has the "right" to all the authority, but that it is useful to delegate some of it. I do not think that a president should have any more authority than goes with his function. Therefore, I do not see how you can delegate authority except when you are ill or taking a holiday. And then you are not exactly delegating *authority*. Someone is doing your job and he has the authority which goes with that particular piece of work. Authority belongs to the job and stays with the job.[7]

Later she made a comment that is of particular interest in its relation to our present quest. In an almost aside she said,

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[7] Mary P. Follett, "The Illusion of Final Authority," *Bulletin of the Taylor Society*, Vol. XI, No. 5, Dec., 1926, p. 244. Italics are Miss Follett's.

> The unfortunate thing in writing on business organization is that our language has not caught up with our actual practice. As distribution of function has superseded hierarchy of position in many plants, delegation of authority should be an obsolete expression; yet we hear it every day.[8]

Now Miss Follett was describing the operation of a decentralized organization, something which is quite familiar at the present time, and what she was saying was that in any organization there is necessarily a great deal of decentralized authority. As the title of her paper, "The Illusion of Final Authority," indicates, and as she clearly states, she was protesting against the notion of a supreme authority which is then broken up into parts by delegation. Her idea of "authority" was in no sense radical, but it caused a great deal of disagreement and comment from her audience. The contention that authority resided in a position rather than in a person seemed hard to realize at that period. Her paper focused attention on the theory of organization and the nature of authority, although du Pont and several other companies had worked out the same answer to the same problem long before. She was really clarifying the word rather than presenting a new meaning. Yet her hearers and readers often misinterpreted her remarks.

FAYOL ON AUTHORITY

At this point it may be well to quote the comments of a previous author to show that Miss Follett was not trying to propose a new meaning for the word authority. It is, by the way, an excellent definition and one that points out that its author had already anticipated some of the problems that have caused confusion in modern writings on the subjejct. For this purpose reference is made to the English translation of Henri Fayol's work, *Administration Industrielle et Generale*. Fayol says:

> Authority is the right to give orders and the power to exact obedience. Distinction must be made between a manager's official authority deriving from office and personal authority, compounded of intelligence, experience, moral worth, ability to lead, past services, and so forth. In the makeup of a good head personal authority is the indispensable complement of official authority. Authority is not to be conceived of apart from responsibility, that is apart from sanction—reward or penalty—which goes with the exercise of power. Responsibility is a corollary of authority, it is its natural consequence and essential counterpart, and wheresoever authority is exercised responsibility arises.[9]

If a slight liberty is taken with Constance Storrs' English translation of Fayol's thoughts and the single word "leadership" is substituted for the term "personal authority" the meaning is not altered, although some rhetorical emphasis may be lost in the distinction Fayol maintained must be made between the position and the

[8] *Ibid.*

[9] Henri Fayol, *General and Industrial Management*, Pitman Publishing Corporation, London, 1949, p. 21.

person who occupies that position. While Miss Follett did not state this distinction between official authority and leadership so clearly, there is no doubt that she would agree, for it is quite apparent that this same distinction was in her mind. By trying to make the word "authority" serve different purposes, some misunderstanding of the thought was caused. The substitution of the term "leadership" for the concept intended by "personal authority" would very likely clear up much of the confusion which has frequently resulted.

BARNARD WRITES WITH AUTHORITY ABOUT AUTHORITY

There is an inclination to quote Chester I. Barnard *in extenso* for he is one about whom it may truly be said, "He writes with authority about authority." No matter how enticing this procedure might be, only a few selected passages will be repeated here since it is believed they explain his thought on the subject adequately for our purpose. In *The Functions of the Executive* Barnard takes great pains and a good many pages to explain his purpose in writing the book, his procedure, and the way he intends to use the terms he employs. In the Preface he says that an invitation to deliver eight lectures at Lowell Institute in Boston and the reading of Justice Cardozo's book, *The Nature of the Judicial Process*, "incited an attempt to arrange for orderly presentation hypotheses which I had gradually constructed through several years concerning the executive processes, which are specialized functions in what we know as 'organizations.' If these functions are to be adequately described, the description must be in terms of the nature of organization itself."[10]

Then, after a pertinent discussion of individuals, organizations, psychological factors, freedom of choice, and the disobedience of orders, laws, and moral codes, he states:

> It is the central hypothesis of this book that the most useful concept for the analysis of experience of co-operative systems is embodied in the definition of a formal organization as a *system of consciously co-ordinated activities or forces of two or more persons.* In any concrete situation in which there is co-operation, several different systems will be components. Some of these will be physical, some biological, some psychological, and so forth, but the element common to all which binds all these other systems into the total concrete co-operative situation is that of organization as defined.[11]

And somewhat later, he writes:

> Hence, although I define an organization as a *system of co-operative activities* of two or more persons—something intangible and impersonal, largely a matter of relationships—nevertheless sometimes for convenience of phraseology, where no confusion of meaning is likely, I shall follow the customary practice of referring to organizations as groups of persons and shall speak of such persons as "members". . . .
>
> Under the definition of an organization given above, an organization is a "construct" analogous to "field of gravity" or "electromagnetic field" as used in physical science.

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[10] Chester I. Barnard, *The Functions of the Executive*, Harvard University Press, Cambridge, Mass., 1938, Preface, p. vii.
[11] *Ibid.*, pp. 73–74. Italics are Barnard's.

The hypothesis we follow is that all of the phenomena concerned are usefully explained if we adopt it, and that existing knowledge and experience are consistent with that assumption.[12]

In respect to his intended use of the word "authority," Barnard is equally careful to explain the meaning he wishes to convey. He proposes it in this way:

We may leave the secondary stage of this analysis for later consideration. What we derive from it is an approximate definition of authority for our purpose: Authority is the character of a communication (order) in a formal organization by virtue of which it is accepted by a contributor to or "member" of the organization as governing the action he contributes; that is, as governing or determining what he does or is not to do so far as the organization is concerned. According to this definition, authority involves two aspects: first, the subjective, the personal, the *accepting* of a communication as authoritative, the aspects which I shall present in this section; and, second, the objective aspect—the character in the communication by virtue of which it is accepted— which I present in the second section, "The System of Coordination."

If a directive communication is accepted by one to whom it is addressed, its authority for him is confirmed or established. It is admitted as the basis of action. Disobedience of such a communication is a denial of its authority for him. Therefore, under this definition the decision as to whether an order has authority or not lies with the persons to whom it is addressed, and does not reside in "persons of authority" or those who issue these orders.[13]

These quotations should be sufficient to show that Barnard was not describing organization and authority in the same sense as were the earlier authors who have been quoted. He is insistent that his concept of an organization is not a tangible thing but is a "construct" of "biological," psychological," and other elements which is analogous to an "electromagnetic field." Authority, then, for him, was something different. It could not be something which related only to a position and which could be enforced by sanctions. It was the "character of a communication" whose acceptance indicated that authority was present.

Barnard's ideas on organization and authority met with considerable disagreement and misunderstanding despite his careful and lengthy explanations. This was to be expected since he was breaking new ground and his concepts were often highly abstract, and at times almost mystical in the true sense of that word. Consequently, after *The Functions of the Executive* appeared he found it necessary to take additional space to clarify his own particular point of view. This he did in his paper on Concepts of Organization, as shown by his beginning statement, which reads:

The purpose of this paper is to develop the concept of organization employed in *The Functions of the Executive,* to set forth the conceptual scheme employed therein, and to show its relation to the theory of organization. These are matters that have puzzled some readers who have found the treatment of them unacceptable or incomprehensible or impractical. I am ready to concede that this may be largely the fault of the exposition; but it is also in part attributable to some novelty in the conceptions employed

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[12] *Ibid.,* p. 75. Italics are Barnard's.
[13] *Ibid.,* p. 163. Italics are Barnard's.

of organization and of the commonly recognized elements such as authority, incentives, communication." [14]

The difficulty in getting Barnard's definition of authority accepted after several years of effort is bemoaned by another author, Herbert A. Simon, in the second edition of his book *Administrative Behavior*. In his prefatory comments about his Chapter VII on "Authority" he says:

> There is no consensus today in the management literature as to how the term "authority" should be used. This is a matter of some regret to me, since I had hoped that the definition employed here, and derived from Barnard, would gain currency because of its obvious convenience and utility.
>
> The source of the difficulty is the fact that many writers still cannot distinguish between (1) a specification of the set of behaviors to which they wish to apply the term "authority"; and (2) a specification of the *circumstances* [15] under which such behaviors will be exhibited. Our definition limits itself to the first of these so that it will be possible to state meaningful and non-circular *empirical* propositions about the circumstances under which authority will be accepted, and the motivations causing that acceptance.
>
> Authority, we say, exists when the behavior premises of another are accepted as bases for decision. Then we can meaningfully ask, "Why?" If we were to call this acceptance "authority" only when it is motivated by its (felt) legitimacy, the "why" would become tautological. Of course, we might have used another word (for example, "influence"), but no other word seemed, or seems, as suitable as authority. [16]

Let us examine this idea of authority by returning to our friend Bill who refused to accept the foreman's order that he was fired. He is now out looking for another job and he no longer has concern about the dissection of a word. The facts are all stated in this case and there will be nothing gained by making additional assumptions. The reasons for the foreman's command are not stated. They may have been caused by the argument, by what he had for breakfast, by Bill's previous conduct, or by a hundred other events. The question is, where did authority lie, and by whom was it exercised? It may be argued that Bill's action by walking out of the shop indicated that he accepted authority, but this seems a mere bandying of words. Barnard recognized that acceptance might be involuntary, but this only raises another question of what we mean by "acceptance." These approaches do not solve our problem concerning what we mean by authority. Maybe we should ask an expert on the subject and interrogate Bill.

Why should the use of a word be considered so important and why has it been thought worth-while to spend so much effort in determining the meanings used by various writers? It has already been shown that considerable confusion exists in the literature of management about what is meant by authority, and in the process we have also seen that the same confusion seems to exist about organizations. If anything can be done to help clarify these terms, the effort has been well spent in furthering the study of management.

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[14] Chester I. Barnard, *Organization and Management*, Harvard University Press, Cambridge, Mass., 1949, p. 111.

[15] Italics are the editor's.

[16] Herbert A. Simon, *Administrative Behavior*, The Macmillan Company, 2nd ed., 1957, pp. xxxiv–xxxv.

SOCRATES AND SMALL DIFFERENCES IN LANGUAGE

The importance of our disquisition was stated by a master of discourse long ago, and it is best to let Socrates set it forth in his familiar form of a dialogue. He starts speaking to Phaedrus well along in their discussion:

> Have we not heard of the Eleatic Palamedes (Zeno), who has an art of speaking which makes the same things appear to his hearers like and unlike, one and many, at rest and in motion too?
>
> Very true.
>
> The art of disputation, then, is not confined to the courts and the assembly, but is one and the same in every use of language; this is that art, if such an art there be, which finds a likeness of everything to which a likeness can be found, and draws into the light of day the likenesses and disguises which are used by others?
>
> How do you mean?
>
> Let me put the matter thus: When will there be more chance of deception—when the difference is large or small?
>
> When the difference is small.
>
> And you will be less likely to be discovered in passing by degrees into the other extreme than when you go at once?
>
> Of course.
>
> He, then, who would deceive others, and not be deceived, must exactly know the real likenesses and differences of things?
>
> Yes, he must.
>
> And if he is ignorant of the true nature of anything, how can he ever distinguish the greater or less degree of likeness to other things of that which he does not know.
>
> He can not.
>
> And when men are deceived, and their notions are at variance with realities, it is clear that the error slips in through some resemblances?
>
> Yes, that is the way.
>
> Then he who would be a master of the art must know the real nature of everything; or he will never know either how to contrive or how to escape the gradual departure from truth into the opposite of truth which is effected by the help of resemblances?[17]

It should be unnecessary to state that the inclusion of the word "deception" in the above passage from Plato indicates no desire on our part to charge any of the writers quoted with the intention to deceive. The reverse, of course, has been the actual case: Every one of the authors has been concerned with trying to explain the truth of organizational situations to the best of his or her ability. They have, however, collectively created misunderstandings, and their insistence upon differences in meanings of words has certainly increased the "chance of deception" in their search for the truth about which they are all concerned. Socrates knew that small differences in the language used could lead to errors in thought and thus bring about a grave misunderstanding of the true nature of things. It is in this vein that we must pursue our quest, and we may find that the actual differences about which various authors have been contending are not as monstrous as we have been led to believe.

It seems evident that the concept of what constitutes authority has gone through somewhat of an evolutionary process in the course of the writings on management

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[17] Plato, Phaedrus, Jowett translation.

during the last half century or less. This suggests that the point of view has changed, and this undoubtedly is what has occurred. A change in point of view may cast new light on the object under observation and be extremely valuable but it need not significantly alter our conception of the nature of the object itself. Some aspects may have been overlooked previously or some may be forgotten or overlooked now.

JAMES D. MOONEY'S VIEWS

We shall call on one more author to help in clearing up this point.

James D. Mooney, who with Alan C. Reiley wrote *Onward Industry* in 1931, had a business experience equaling that of Chester I. Barnard, yet their pronouncements about organization have seemed to some people to be poles apart. A careful reading of both men would not substantiate this contention, but it nevertheless prevails. Since Barnard has been given his say, it is only fair to let Mooney also appear before us. Like Barnard, he is a clear writer, although somewhat more concise. Again, there is an inclination to quote widely from his thought, for he is a perceptive student of organization, but in this instance the following selection should serve our immediate purpose.

> Organization, as I have said, means concerted human effort, the kind of effort that is essential to the highest measure of success of any group undertaking. But what, in industrial organization, are the conditions necessary to the highest efficiency of such concerted effort? If we address this question to a score of representative industrial executives, we would of course get many valuable and inspirational answers. But I wonder how many of these answers would give the structural principles of organization the importance that I believe they deserve?
>
> It may be asked why I emphasize the term "structural." The reason is that many people think of organization as in some way synonymous with administration or management. In every organization there is a collective job to be done, consisting always of the sum of many individual jobs, and the task of administration, operating through management, is the co-ordination of all the human effort necessary to this end. Such co-ordination, however, always presupposes the jobs to be co-ordinated. The job as such is therefore antecedent to the man on the job, and *the sound co-ordination of these jobs, considered simply as jobs, must be the first and necessary condition in the effective co-ordination of the human factor.*[18]

SUMMING UP THE EVIDENCE

It is now possible to sum up the evidence that has been gathered on the different statements concerning the nature of authority. We find that the arguments and confusion that have arisen seem to revolve around different ways of looking at organization—whether it should be considered as a structure built to achieve some

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[18] The italics are the editor's. From James D. Mooney, *The Principles of Organization*, monograph appearing as No. III in Luther Gulick and L. Urwick (eds.), Papers on the Science of Administration, Institute of Public Administration, New York, 3rd edition, 1954, p. 92.

objective or as a dynamic aggregation of social beings. Several schools of thought have developed and these frequently have insisted on holding fixed opinions on the way in which organizations should be viewed. But all of them agree that authority is one of the foundation stones of both formal and informal organization—possibly the key to the whole construction.

The concepts started with authority being placed in one person who then delegated it downward to other persons who acted for him in various capacities. The influence of the military command can be seen here. The next step was the idea that authority was connected with the work to be done and appeared throughout the organization as a necessity for the acomplishment of tasks. Finally, we arrive at the notion that authority does not exist unless it is effectively executed and that it is therefore something which is granted by a subordinate to his superior or to some one else. Thus the meaning of the word has come full circle. While all of these concepts are valuable to our understanding of the subject of administration or management, they have certainly stretched the meaning of one word to its limits. Consequently, if a writer may make his own definition at will, the word will be deprived of any definite signification.

Clearness of exposition requires that we select words with exact meanings wherever possible. When this cannot be done, the use of descriptive adjectives or the coinage of new words will promote clarity. The latter alternative is used by physical scientists, and this may help explain why their writings are so lucid and concise in comparison with those of the social scientists. It is readily admitted that an embryonic science, such as the study of management, has a difficult task in developing an exact vocabulary, but this is no reason for not making the attempt.

A USEFUL ANALOGY

An analogy may be made here that will aid in this endeavor. For a good many years human organizations have been compared to the physical and psychological components of the human organism—even long before the so-called behaviorists started writing, in fact. Our present investigation has indicated that the various schools of thought on organization can be roughly designated as those who emphasize *the structure*, those who emphasize *the performance of functions*,[19] and those who emphasize *behavior*. Analogously, anatomy, physiology, and psychology are recognized as distinct sciences in the study of the human organism, and it is suggested that this analogy may exist in the way our study of larger organizations is tending.

Each science has its own vocabulary of terms, although all are closely related. Also we do not as yet have a complete understanding of their interdependence.

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[19] The writings of Mary P. Follett might be connected with those who emphasize the performance of functions, but whether or not exception is taken to such an appellation, the illustration is useful for our purpose at this point and the connection with Miss Follett's writings is not intended to be stressed in any way.

*If we are to develop anything approaching a science of management or administra-
tion, it will be necessary to devise a more exact terminology to express the various
concepts.* A surgeon who is engaged in correcting a leaky valve of the heart does
not say, "I am operating on the circulation of the blood," even though this is the
intended result of his performance.

CONCLUSIONS

It was not contemplated in the original design of this investigation that a final
definition of authority would be attempted. This would be both presumptuous
and futile. People are going to continue to use words that suit their needs, and
when they have taken a stand they are not easily changed in their contentions.
However, several tentative conclusions may be made with the hope that they may
be suggestive in clearing up the present confusion about the nature of authority.

The writers who emphasize the structure of organization most certainly have
a good case for their employment of the word "authority." They use it in its
commonly accepted sense and need no long explanation of their concept. Long ago
they agreed to the modification of substituting authority of position for authority
of person, and this concept can encompass situational authority as well. This
meaning also clearly explains the staff-line relationship.

On the other hand, the use of the word by the behaviorists appears strained.
And although the thought they are trying to express is surely worth the effort they
have expended in presenting it, there is a suspicion that it is really not authority
they mean but something else. Herbert Simon, in the quotation given above, appears
almost to have arrived at this same conclusion. Possibly some one else can suggest
a better term for their purposes.

The nature of authority seems to be the right to see that tasks are accomplished.
There is something more fundamental in the concept of "authority" than the in-
clination of some one to work or not to work for an organization.

Organizational Implications

of Automation

OTIS LIPSTREU

University of Colorado

The fusion of machine integration, feedback controls, and computer technology promises marked changes in business management during the later years of the Twentieth Century. This so-called "second industrial revolution" has been dramatically described as the "age of automation."

The word automation has had a rather sensational press. Recent news releases such as "electronic ghosts are ready to step into American factories, [to] boss complicated machines, [and to] speed up and expand production" are fairly commonplace.[1] But they may lead the reader to a rather exaggerated idea of the present state of industrial technology.[2] On the other hand, it is reasonable to believe that the next decade will produce explosive developments in technology which will modify significantly the work environment for a considerable segment of the industrial world.[3] The author has recently completed a pilot study based on the hypothesis that it is possible, even at this early stage in automated development, to identify many of the human and organizational priblems that will require careful planning if negative consequences are to be minimized or mitigated.[4]

From the literature in the field and through interviews with knowledgeable people throughout the United States, forty-six hypothetical statements regarding the potential implications of advancing automation were developed. From a sample consisting of the 500 largest industrial corporations in the Untied States,[5] top manufacturing executives were invited to participate in this study by checking the highest level of automation presently existing in their plants and by indicating their experience and opinion relative to the effects of increasing automation on various aspects of manpower management. Two hundred and ten check-list replies,

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supported by numerous comments, were received. The results were tabulated in two categories—a "Higher-Automated" group (the HA group) and a "Lower-Automated" group (the LA group).

The following results are abstracted from this study. They are presented as direct responses to some of the most significant organizational queries that are presently being raised in this area of concern.

DOES AUTOMATION INCREASE SUPERVISORY RESPONSIBILITY?

A highly positive response was obtained to this question. 76% and 75%, respectively, in the HA and LA groups assented, and their positive replies were substantiated by a rather sophisticated level of experience. Bright has characterized this increased responsibility as follows:

> Automation demands an alert, machinery-conscious supervisor of a higher caliber. . . . The man who has more than a high school education fits in. He can look ahead and grasp the impact of change.[6]

DOES AUTOMATION INCREASE THE INTERDEPENDENCE OF WORK AMONG SUPERVISORS AT THE SAME LEVEL?

Because of the high degree of machine integration required in more automatic work, one would guess in advance that greater need for co-operation among supervisors would be required. 62% of the executives in the HA group were indeed in agreement concerning this heightened interdependence of work, while 53% of the respondents in the LA group concurred in this same conclusion. Approximately 20% in both groups disagreed.[7]

DOES AUTOMATION INCREASE THE RATIO OF SUPERVISORS TO WORKERS?

One interesting aspect of the increased automaticity of work is that with fewer machine workers there can be relatively little decrease in the number of supervisory personnel. But the reason becomes clear when one considers that supervisors must assume responsibility for a larger span of the line in which millions of dollars worth of machinery must continue to function uninterruptedly. The respondents in this investigation agreed overwhelmingly—at the 75% level—that the ratio of supervisors to workers increases with advances in automation.

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[6] James R. Bright, *Automation and Management*, Boston, Division of Research, Graduate School of Business Administration, Harvard University, 1958, p. 209.

[7] When not otherwise indicated, remaining respondents were undecided.

DOES AUTOMATION TEND TO REDUCE THE NUMBER OF SUPERVISORY LEVELS?

Other automation studies have indicated that increasing automation results in fewer levels of supervision.[8] However, the results of this investigation tend to question unequivocal support of such a conclusion. In answer to the question, *"Does automation tend to reduce the number of supervisory levels?"*, 55% of the HA group and 46% of the LA group disagreed, whereas less than 33% voted affirmatively.

DOES AUTOMATION REDUCE THE AMOUNT OF DIRECT COMMUNICATION REQUIRED BETWEEN SUPERVISORS AND WORKERS?

A logical deduction by those studying the consequences of automation might be that as the work environment becomes more automatic, less personal interaction and communication between supervisors and workers are required. Such a theory, however, is *not* supported in any automation research. In this study the executives likewise rejected, by a wide margin, the prospect of any reduction in direct communication.

DOES AUTOMATION LEAD TO A GREATER RATIO OF INDIRECT LABOR TO THE TOTAL PLANT LABOR FORCE?

The greater complexity of integrated machines and feedback mechanisms indicates that mechanical, electronic, hydraulic and even nucleonic technicians are key employees in automated plants. Not only are greater numbers of these specialists needed, but it would also appear that they must exercise close, constant supervision of the production processes, since a breakdown at any place stops an entire production line. The responding executives agreed overwhelmingly—94% in the HA group and 75% in the LA group—concerning this need for a higher percentage of technicians in the plant labor force. It appears that there is little doubt that automation does bring with it more indirect labor of a type that is concerned intimately with the direct flow of production. And to a corollary statement, *"Automation requires closer attention by maintenance technicians,"* agreement reached the 90% and 89% levels for the HA and LA groups, respectively.

DOES AUTOMATION REDUCE THE SIZE OF WORK CREWS OR TEAMS?

New concepts of production appear to minimize the need for conventional work teams and may change their composition. For example, machine monitors and

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[8] See, *e.g.*, Charles R. Walker, *Toward the Automatic Factory*, New Haven, Yale University Press, 1957, p. 27.

electronic, mechanical, and hydraulic technicians may comprise new types of work teams which cut across traditional craft lines. Both the HA and LA executive groups supported the position that the size of work teams is reduced. The responses were at the 80% and 81% levels, respectively.

DOES AUTOMATION REALLY LEAD TO INCREASED ISOLATION OF WORKERS?

Any visitor to an automated plant is quickly impressed with the relatively few workers who operate large and complex batteries of machines. Most writers and researchers are in agreement that the degree of isolation increases with the advance in automatic processes. The respondents in this study, by large majorities, also agreed on this increasing isolation of work. Although it is doubtful that the concept "lonely pay" will become a serious union demand in the near future, there are very definite psychological and sociological problems attending this new "loneliness of work" which will require careful attention and study.

DOES AUTOMATION ALLOW WORKERS GREATER FREEDOM OF MOVEMENT AWAY FROM THEIR MACHINES?

Workers in automated plants generally complain that the new machines limit their freedom of movement away from their work stations. No longer are they so free, for example, to visit with friends at the next machines. In the first place, their friends are not in sight, and, secondly, the work demands close attention and constant alertness. The respondents in this investigation registered solid agreement with this position by disagreeing with the question as asked, thus giving strong credence to the above-mentioned dissatisfactions.

DOES AUTOMATION REDUCE THE PREVALENCE OF INFORMAL WORKER CLIQUES?

Probably a favorite dream of some harried supervisors is a hoped-for someday when informal organization and some of its less favorable aspects are negligible factors in the management of men. Apparently automation holds just such a prospect for many, since 44% of the respondents in each group agreed that the prevalence of informal worker cliques will be reduced by automation. Only 24% in each group disagreed with the question as asked, but a large percentage was undecided and none of the respondents evidenced a high experience base for judgment.

Perhaps increased automation does reduce the presence of informal organization. If, however, we rely on present research data regarding man's social nature, we must accept the theory that when customary social interaction is disrupted, men will seek and develop new forms of social expression. The new types of social interaction may also present new supervisory challenges.

DOES AUTOMATION INCREASE THE NEED FOR STAND-BY PERSONNEL AT THE WORK LEVEL?

The greater interdependence among processes plus the fact that indispositions on the part of workers at crucial times could result in damage to very expensive machinery—to say nothing of the production of large amounts of damaged goods— has raised the question regarding the need for stand-by personnel. There seems little doubt that the union will incorporate demands for such additions to the work force in forthcoming contract negotiations. Whether such demands will be realistic or whether they will be merely featherbedding tactics is an area that management must evaluate objectively.

The literature of automation is vague on this issue, and the responses in this study actually add little, if any, clarification. 42% of the HA group *agreed* that stand-by personnel are needed, whereas 43% of the LA group *disagreed* with the need for additional workers. One generalization which might tentatively be drawn from these contrasting responses—although it may be difficult to defend—is that the need for stand-by workers rises as the degree of automation increases.

CONCLUSIONS

What specific insights can the manager, then, reasonably draw from this investigation that will enable him to minimize and mitigate the negative consequences arising from automating his plant? Analysis of the foregoing data adds more than a little support to the theory that automation brings with it significant changes in the work environment.

1. One of the more obvious general conclusions which may be drawn from the foregoing responses and other data is that the supervisor will surely regain some of his lost discretionary authority. Automaticity of work requires that he make decisions at the work level quickly, decisions which formerly were made at higher levels in the hierarchy. His work will increasingly resemble that of present middle management—he will supervise fewer workers; he will be required to co-ordinate his functions more closely with colleagues at the same management level; and he will probably be called upon to supervise and co-ordinate the work of a maintenance staff.

2. With the number of his supervisees reduced, the supervisor should be able to do a better "human relations job"; but unless he is carefully trained in his new managerial role, he may tend to over-supervise.

3. There will be no reduction in the amount of direct, verbal interaction required between supervisors and workers; however, communication media will probably change in the direction of greater use of public address and other more impersonal electronic systems. The substance of communication will probably be characterized less by direct work assignments and personal directions and more by a consultative, team approach geared to the objective of "keeping the line moving."

4. The presence of a greater number of maintenance technicians, who will devote close attention to production processes, poses some interesting and thorny organizational problems. Careful consideration of the most effective authority relationships between supervisors, machine monitors, and technicians is an organizational task carrying high priority.

5. The increasing physical isolation of work, the reduction in the size and prevalence of work teams, and the fact that workers will have no greater freedom of movement away from their machines than they possessed in non-automated environments, all tend to suggest the probability of a new form of social organization in the plant. There are subtle and important implications here, and they should be carefully examined so that the new social dimensions of work are understood and positively correlated with the attainment of enterprise objectives.

6. The need for stand-by employees at the operating level requires intensive study. No definite conclusions can be drawn from current research data. But management must bear in mind that the union may welcome this quandary as an opportunity to forestall any temporary or short-run displacement of labor. The need for further study should not be construed as an attempt to write off management's responsibility for short-run worker displacement. Rather, the purpose here is to sound an alarm concerning possible efforts to add unnecessary labor costs through featherbedding ruses during the period that management is trying to make up its mind whether or not it needs stand-by labor.

If the implications suggested herein (and many others, of course) are carefully investigated and analyzed, management and society in general may indeed soon reap the promised benefits of the "automated age."
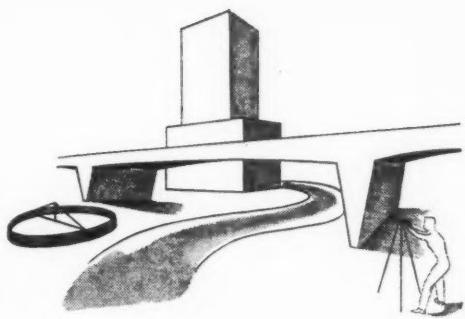
MANAGEMENT BRAIN-POWER NEEDS FOR THE 1970'S

Introduction

The last sentence of this article reads: "In the final analysis our manager shortage may indeed be much more serious than our engineering and scientific shortage." Let us see how this conclusion is reached.

By now we know that managers are made, not born. And they can not be made in the short span of a week, a month, or a year. The development of managerial talent is a long, involved process which requires years to bring each executive up to what might be called "normal managerial competence." After this initial training, there is a regular need for re-education to meet changed conditions and a need for further development to prepare managers for higher positions. Hence, management development becomes an unending requirement in modern society—for business as well as for all other types of organizations.

Since management development is a slow process, we must start now to prepare to meet our needs for the 1970's. If we wait until the decade of the 1970's is upon us, it is too late. But since we often do not realize the magnitude of a job, it is appropriate that we specifically project our requirements for 1975, so that we can see more clearly what they will be. Only if we know quite specifically what our needs are likely to be, can we intelligently plan for them.

The term "manager" as used in this discussion applies to all persons who supervise others in the sense that they plan, organize, direct, and appraise their work in any type of organization. It excludes one-man proprietorships and key staff people who do not supervise others but are sometimes, particularly within the firm, considered to be a part of "the management."

The Need For NEW Managers

Conservative estimates state that we shall have more than 20,000,000 additional persons in the labor force by 1957.[1] As pointed out recently in a significant eco-

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[1] These figures are based upon Bureau of Labor Statistics projections; cf. also *Business Week*, March 8, 1958, p. 134.

nomic study, modern industrial society is different from that of former years. In today's complex society workers can not be productive unless their work is properly managed by competent managers.[2] Therefore we must train a portion of these 20,000,000 new workers to be managers. Assuming that one out of every eight workers[3] (or 12 1/2% of the labor force) will be a manager, we conclude that 2,500,000 *new* managers must be trained for this new labor force.

If our present trend toward industrialization continues, even more than 2,500,000 managers will have to be trained, because research results indicate that advanced technology requires an increase in the *proportion* of managers in the labor force.[4] For example, one recent study of 50 companies revealed that more than two-thirds of the companies had increased their *proportion* of managers to workers during the years from 1947 to 1955. Among these firms the average increase during these years was 32% for executives and 52% for staff assistants. Some firms were shocked by this magnitude of change in their management-labor ratio and quickly rechecked their figures.[5]

If our management-labor ratio should increase from 12 1/2% to 14% of the labor force by 1975,[6] we shall have to train an additional 300,000 managers for the *new* labor force alone.

Further, we must take into account the fact that some persons will be trained for management, but will fail or will choose some other work. If we allow only 10% for this "shrinkage" and if we apply the 10% only to the *new* managers who will be supervising the *new* labor force, an additional 280,000 managers must be trained. This, then, makes a grand total of 3,080,000 new managers that will be needed for the new labor force. Since the people who will comprise the work force in 1975 are already alive, this managerial need is rather certain to come to pass, barring some great human catastrophe. But even if these estimates are 500,000 too high, our management development needs for the *new* labor force will still be of greater magnitude than our present meager efforts can meet.

The Management Needs of Our Existing Labor Force

Now, let us look at our existing labor force, 66,000,000 strong.[7] Perhaps 12 1/2% of them, or 8,250,000, are managers. Considering that their average work

[2] Cf. Frederick Harbison and Charles A. Myers, *Management in the Industrial World*, New York, McGraw-Hill Book Company, 1959, p. 27.

[3] This figure is derived from census data and other studies of management-labor ratios in various organizations.

[4] Cf. Harbison and Myers, *op. cit.*, pp. 21–27.

[5] "Our Growing Executive Population," *The Management Review*, September, 1959, pp. 34–36.

[6] In 1952 one study of manufacturing firms showed that managers were 13.6 per cent of the work force at that time. See Robert D. Loken and Winfield C. J. Thake, "How Many Managers Are There?," *Current Economic Comment*, Bureau of Economic and Business Research, University of Illinois, Urbana, Illinois, November, 1952, pp. 18–27.

[7] Editor's note: The U.S. Department of Labor's Bureau of Labor Statistics has reported the following figures as of June 30, 1960 (000's omitted): Total labor force including armed forces, 75,499; total civilian labor force, 73,002, including 6,856 employed in agriculture, 61,723 employed in non-agricultural industries, and 4,423 unemployed; *Employment and Earnings*, Vol. 7, No. 1, July, 1960, p. 1.

life *as managers* is less than thirty years, we shall have to train replacements for at least 50% within the 15 years from now to 1975. This will be 4,125,000 replacement managers! Since today's managerial group is, for a number of reasons, top-heavy with age, the 4,125,000 figure for replacement managers appears to be conservative.

Applying the 10% shrinkage figure and the increased management-labor ratio from 12 1/2% to 14% that was used earlier, we shall have to train 412,500 and 990,000 replacements, respectively. When these figures are added to the 4,125,000 managers in the present labor force who will have to be replaced within the next fifteen years we arrive at a grand total of 5,527,500 replacement managers.

Grand Total Need: 8,607,500 Managers

When the 3,080,000 managers for the *new* labor force are added to this total of 5,527,500 replacement managers we have a total managerial development need of 8, 607,500 persons by 1975!

Although a training need of 8,607,500 managers is certainly astronomical, it does not take into account the fact that our present managerial group is top-heavy with age. Nor does it in any way count the necessary re-training and developmental training of *existing* managers during the next 15 years.

Conclusion

In this day of large figures, a development need of 8,607,500 may not seem large. But if we compare it with the known educational capacity of our colleges we begin to realize its significance and magnitude. For example, business schools graduated 57,000 and engineering schools 35,000 persons in 1957–58. At this rate they would graduate only 1,380,000 persons in 15 years, which is a small figure indeed compared to the over eight million managers that are needed. Even a *doubling* of the foregoing rate for the entire 15 years would graduate only 2,760,000 persons from business and engineering schools. And many of these graduates do not become managers!

College education does not make a manager; neither does experience alone. Hence, universities and businesses must *share* the almost overwhelming responsibility for developing our management brain-power needs for the 1970's. Each faces a supreme task of a magnitude not yet recognized.

Will we mobilize our resources to get the job done? If so, the time to start is now. *Specifically, what should be the role of the Academy of Management and its members in this task?* Can we offer more policy guidance and more effective creative leadership to meet the accelerating needs? Is there something else that others can do or that we should be doing?

In the final analysis our manager shortage may indeed be much more serious than our engineering and scientific shortage.

KEITH DAVIS
Arizona State University

Academy of Management
News and Notes

The annual meeting of the Academy of Management will be held on the campus of Washington University on Wednesday, December 28, 1960. Professor George Terry, of Northwestern University, Vice President of the Academy of Management, is in charge of arrangements. Professor Terry reports that almost 100 Academy members have expressed their preferences by answering his questionnaire regarding program arrangements for the December 28 meeting. The work of shaping the program in accordance with members' wishes is moving ahead rapidly. Tailormade to our suggestions, a stimulating, timely, and challenging educational program will be featured. Plan now to attend.

The following Academy members are attending the Faculty Seminar in New Developments in Business Administration, which is being held on the Cornell University campus in August:

> Edward Burris—Oklahoma State University
> Rocco Carzo, Jr.—Pennsylvania State University
> Robert Grant Cook—University of Missouri
> William M. Fox—University of Florida
> Claude S. George—University of North Carolina
> Malcolm H. Gotterer—University of Cailfornia (Berkeley)
> William E. Green—University of Mississippi
> John W. Hennessey, Jr.—Dartmouth College
> Dale A. Henning—University of Washington
> Lawrence C. Hackamack—University of Massachusetts
> Thomas S. Isaack—West Virginia University
> Virgil A. James—University of Texas
> Eugene E. Jennings—Michigan State University
> Joseph Litterer—University of Illinois
> Stanley Seimer—Syracuse University
> C. Clinton Spivey—University of Maryland
> E. H. van Delden—New York University

The seminar is sponsored by the Ford Foundation and the Carnegie Institute of Technology and will be held from August 7 to September 2, 1960.

The second Mountain and Plains Management Conference will be held at the College of Business Administration, University of Denver, starting at 9:00 a.m., Friday, October 28 and adjourning after lunch, Saturday, October 29. The Conference is organized informally and is sponsored by a different school each year. Plans call for an informal meeting on subjects of interest to management teachers. Information on the program will be released later, but the Committee welcomes your suggestions for an interesting and lively meeting. The cost will be a $3.00 registration fee plus approximately $8.00 for the Friday and Saturday luncheons and the Friday dinner. Address all inquiries and/or reservations to Professor

Jack W. Martin, College of Business Administration, University of Denver, 1445 ~eveland Place, Denver 2, Colorado.

The Western Chapter of the Academy of Management has elected its first officers: President, Harold Koontz, of UCLA; President-Elect, Austin Grimshaw, of the University of Washington; Vice-President and Program Chairman, William Voris, of Los Angeles State College; Secretary-Treasurer, Keith Davis, of Arizona State University.

The Seventh International Meeting of The Institute of Management Sciences will be held October 20 through October 22, 1960 at the Hotel Roosevelt in New York City. Sessions will be conducted on Behavioral Science and Management Science, Applications and Tools of Management Science, and the Use of Computers in Simulation. For fuller information write to Mr. James Townsend, 30 East 42nd Street, New York 17, New York.

The Fifth Annual Convention of the Management Division of the Southern Economic Association will be held in Atlanta on the Friday and Saturday preceding Thanksgiving. Professor Claude S. George, of the University of North Carolina, is chairman this year. Professor Chester F. Lay, who organized the Management Division four years ago and was chairman for the first two years, will speak on the subject "Education for the Managers of 1980." Fuller program details will be available later.

The National Board of Directors of the Society for the Advancement of Management has announced the inauguration of the S.A.M. Advanced Management Course, a high-level decentralized manager development program designed to improve the conceptual skills of American management. According to S.A.M. National President Dause L. Bibby, the course will be given on a limited basis at several selected locations throughout the United States beginning in September, 1960. The seventeen-session course will meet every alternate week for approximately eight months. Each session, of about four hours in length, will be held in a convenient location at which required facilities are available. It can be conducted either as a multiple-company or as an in-company course. Because S.A.M. has a network of senior chapters throughout the United States and Canada which can sponsor the course, a participant may take one or more units in one location and carry on with subsequent units at some other location if he is transferred or relocated, with no loss of continuity. This decentralization feature permits attendance without the need for a participant to take excessive time, if any, from his regular company job. It also eliminates living and travel expenses. Readers desiring additional information may write to the Society for the Advancement of Management, 74 Fifth Avenue, New York 11, New York.

Dr. James H. Healey, who has recently returned from Chile to The Ohio State University, where, as part-time Associate Professor of Management he is teaching and advising graduate students, has called attention to the role played by Academy members in ICARE, the Chilean-American Management Association. Professor

Earl Planty, of the University of Illinois, who was team leader of the first session, outlined the course objectives and content in 1956. Each year of the five years that a five-weeks executive development program was conducted in Chile, an Academy member has handled the organization section of the course. For the first two years the organization sections were handled by William H. Newman, for the third year by Joseph W. Towle, and for the past two years by Dr. Healey. Other Academy members who have figured prominently in other sections of the course are: Keith Davis, Billy E. Goetz, Merten J. Mandeville, and Ross M. Trump, who have taught in the areas of human relations, production management, administrative policy, marketing administration, and personnel administration. In 1959 and 1960 a Chilean professor, Gustavo Possel, handled the production section of the course. The year 1959 was the first time that a Chilean had handled any major part of the program.

On November 7, 1957, professors from sixteen southern universities met in Memphis, Tennessee and organized the Southern Case Writers Association. The purpose of the Association is to encourage the writing and use of cases. The writers have taken as their first objective the production of cases to be used in a business policy course. This is an integrating course offered at the senior or graduate level. The cases will attempt to break down the notion some students have that business problems exist as isolated problems of accounting, marketing, finance, production, and similar subjects. The integrated case materials will show the interrelationships of the knowledge and theory gathered in previous courses and the application of this information to specific business situations.

The Ford Foundaton has provided funds so that the teachers are released from a part of their teaching load to gather their materials and write their cases.

Several organizational theorists and behavioral scientists are helping the writers include materials on these subjects in their cases.

Dean M. M. Hargrove, President of the Association, reports that substantial progress has been made during the first year of actual writing and that about a score of cases will be completed by September 1, 1960.

A list of the case writers includes: Professors Edward E. Burris, Oklahoma State University; Robert D. Hay, University of Arkansas; Virgil A. James, University of Texas; Preston P. LeBreton, Louisiana State University; and Leon C. Megginson, Louisiana State University.

The Finance Forum, conducted by the Joint Committee on Education and sponsored by the Investment Bankers Association, the National Association of Investment Companies, the National Association of Securities Dealers, the Association of Stock Exchange Firms, the New York Stock Exchange, and the American Stock Exchange, was held at New York University in June. The Forum is in its ninth year. It is held for three weeks each June in New York City. The sessions cover all phases of the money market and its institutions. Transportation and living expenses are paid to all participants. Academy member E. H. van Delden was in attendance this year.

A Fulbright teaching and research grant has been awarded to Wayne G. Broehl, of the Amos Tuck School of Business Administration, Dartmouth College, for the 1960-61 academic year. Professor Broehl will be teaching at University College, Dublin, Ireland.

Beginning in September of this year, Harry P. Evarts, Assistant Professor of Production Management at Northwestern University, will be in Japan serving as consultant for the International Co-operation Administration. He will advise Japanese businessmen on production control problems and will train teams of university professors and Japanese middle management men in the art of writing and using production management cases in university teaching and professional management training.

Borje O. Saxberg was recently promoted to Associate Professor of Policy, Personnel Relations, and Production at the University of Washington. He will be on leave during the academic year 1960-61 to pursue a program of study in cultural anthropology and sociology at Cornell University under a Ford Faculty Study Fellowship.

Dr. Kenneth W. Olm, of the University of Texas, has been promoted to Associate Professor effective September 1, 1960.

Dr. Burnard H. Sord, Associate Professor of Management at the University of Texas, is returning from Italy this August. He has been serving for the past year as a staff member at Ente Nazionale Idrocarburi's Management and Technical Institute.

The IUC (International University Contact for Management Education) is sponsoring a new journal, *Management International*. The new management journal will be edited by Professor Ir. T. J. Bezemer.

Dr. Robert Henderson, Chairman of the Department of Business Administration at Bowling Green State University, is spending the summer in Seattle, Washington where he is serving as a consultant on personnel problems with the Boeing Aircraft Corporation.

Kenneth H. Myers, recently appointed Professor at Northwestern University, has just returned from the Institute for Business Economics at the University of Southern California where he participated as a member of the faculty in a four-week program.

Clay Hollister has resigned from Case Institute after ten years of service. He has joined the Management Services staff of Ernst and Ernst with headquarters in Cleveland. One of his major interests will be executive recruitment.

The University of Texas has granted leave to Virgil A. James to serve as adviser on management selection and development for Socony Mobil Oil Company in New York during the coming year.

Dr. Thomas H. Carroll, formerly Vice President of the Ford Foundation, is the new President of the George Washington University, Washington, D.C.

Dr. Robert Dvorsky, formerly of Michigan State University, has accepted a position at Bowling Green State University. He will be Assistant Professor of Business Administration.

Professor Andrew Barta, former Chairman of the Departments of Production Management and Personnel and Industrial Relations of the College of Business Administration, Syracuse University, has returned home after a three years' leave of absence. During this time he was a Visiting Professor of Management at the Eliezer Kaplan School of Economics and Social Sciences of the Hebrew University, Israel, where he was engaged in setting up a business administration curriculum and department under a project sponsored jointly by New York University and the International Co-operation Administration. Professor Barta feels that through this project a lasting contribution has been made toward Israel's developing industrialization and her eventual economic independence.

Dr. William E. Hurley, who joined the faculty of The Ohio State University School of Logistics at Wright-Patterson Air Force Base in July, 1959, has recently been promoted to the Chairmanship of the Management Department of the School of Logistics. Dr. Hurley has responsibility for nine faculty men presenting eight courses of study in the area of military logistics. These include systems engineering, manpower management, quality control, maintenance engineering, and materiel management. The School is a joint venture in executive development between The Ohio State University and the Air Materiel Command. It offers twenty-three different courses in logistics ranging in length from three weeks to nine months. In 1959 the School graduated 2,200 students. It has 2,500 more programmed for graduation this year.

Professor Philip C. Shaak received his D.B.A. degree from Harvard University in June, 1960. Effective July 1 Professor Shaak was appointed Associate Professor of Management at the State University at Rutgers.

Dr. Claude McMillan and Dr. Richard Gonzalez will return to the Michigan State University campus in the fall of 1960 after a four- and a two-year stint, respectively, in Brazil at the Escola de Administracao de Empressas de Sao Paulo. This is a joint project of the Getulio Vargas Foundation, ICA, and Michigan State University.

J. Allen Harlan, of the University of Arizona, has recently been appointed Professor of Business Administration.

Dr. E. T. Hellebrandt, Professor of Economics and Management at Ohio University, Athens, Ohio, has for the past year been on leave while teaching at the Management Development Institute in Lausanne, Switzerland. Dr. Hellebrandt's teaching duties were in the fields of personnel administration, industrial production, and general management. He will return to Ohio University in September.

Stanley J. Seimer, of Syracuse University, was recently promoted to Professor of Production Management.

The Japanese Management Association is sponsoring two weeks of seminars and lectures for a select group of top Japanese managers in October, 1960. Professor Harold Koontz, of UCLA, will be in charge of the seminars and will serve as lecturer.

Dr. Leon C. Megginson, of Louisiana State University, has been promoted to Professor of Management.

Emmanuel Salemi, formerly Assistant Professor of Management at the University of Illinois, has accepted a position in the Department of Management at Los Angeles State College effective this September.

Professor Bruce D. McSparrin, Jr., Department of Management, Arizona State University, will become Associate Professor of Management at the University of Oklahoma this September.

Thomas S. Isaack, of West Virginia University, has recently been promoted to Professor of Management.

The First National Simulation Forum was held from May 16 to May 18 this year at Saranac Lake, New York, under the auspices of the American Management Association. Academy member Dr. Bruce E. De Spelder, of Wayne State University, was in attendance.

Professor Preston P. LeBreton has resigned as Head of the Department of Management and Marketing at Louisiana State University to accept a position as Executive Officer of the Department of Management at the University of Washington.

Dr. Ward J. McDowell has resigned from the Department of Marketing at Michigan State University to assume a position with Arthur D. Little, Inc., in Boston.

Stanley Vance has resigned as Dean of the College of Business Administration and Head of the Department of Industrial Administration and Production at Kent State University. He has accepted an endowed chair, the H. T. Miner Professorship in Industrial Management, at the School of Business Administration, University of Oregon.

Dr. William T. Greenwood, Research Analyst at the Little Rock Center, University of Arkansas, has been appointed Associate Professor of Management at Arizona State University, Tempe, Arizona.

During the first semester of 1960–61, Dr. H. R. Neville, Professor and Director of Continuing Education Services at Michigan State University, will be Visiting Professor in economics, marketing, and management at Louisiana State University.

Dr. L. D. Bishop, Chairman of the Department of Management at the University of Oklahoma, was recently appointed Professor of Management. Professor Bishop was also elected president of the Southwest Management Association for the coming year.

Professor Chester F. Lay has just completed the first year of a six-year appointment as Professor of Management and Director of Graduate Studies in Business Administration at Trinity University. Professor Lay had formerly served as Professor and Director of Graduate Studies in management at Southern Methodist University.

Academy members Thomas J. Luck and Robert Barclay participated as faculty members for the American Management Association's Chicago Seminar on "Personnel Administration in a Non-Union Company."

Herbert G. Zollitsch, Associate Professor and Chairman of the Department of Production and Personnel Management at Marquette University, has been promoted to Professor.

The School of Commerce at Wisconsin University recently received a research grant of $250,000 from the Ford Foundation. Research will relate to a study of retirement plans from the viewpoint of the older worker. Academy member Alton C. Johnson, Assistant Professor of Commerce, is one of the members of the Wisconsin faculty who will be associated with the project.

Professor Joseph W. Towle, of Washington University, President of the Academy of Management, has recently been appointed Director of the Middle Management Program, a new unit in the executive development work sponsored by the Graduate School of Business Administration at Washington University. The new program is designed for executives whose responsibilities fall below the level of top management and above first-line supervision. Participants will spend three full days in a session at Père Marquette Park in Illinois and will then meet Fridays and Saturdays of every other week on the Washington University campus.

Effective July 1, John E. Burns, of DePaul University, was appointed Associate Editor of *Industrial Management* and Editor of *Industrial Management's* Labor and Industrial Relations Department.

The Bruce Publishing Company, of Milwaukee, has announced the appointment of Professor R. W. Morell, Chairman of the Department of Business Administration at St. Joseph's College, Rensselaer, Indiana, to the position of Consulting Editor for their new textbook series in Business and Economics.

Academy member Rhea H. West, Jr. reports an address change from the Massachusetts Institute of Technology, Cambridge, Massachusetts to 1813 Yale Avenue, Knoxville, Tennessee.

Will readers having information regarding the current addresses of the following Academy members please pass this information along to the editor of the JOURNAL: John Sylvester and Henry B. Wilson.

J. H. Greene, Associate Professor of Industrial Engineering, has called our attention to Purdue University's new graduate curriculum in industrial engineering.

This new program is unique in that it is organized around the "field" concept for industrial engineers. The program embraces the following five "fields."

Analysis: Mathematical and analytical methods, industrial statistics, linear programming, decision theory, queueing theory, operations research.

Job Design: Methods engineering and work measurement, job evaluation, wage administration, human engineering.

Manufacturing Facilities: Process planning and design, plant design, production tooling, material handling systems, automation.

Production Management: Organization analysis and design, industrial research, history and philosophy of industrial engineering, co-ordination of manufacturing functions.

Systems and Controls: Inventory and production control, quality control, cost control, system analysis and design, data processing, manufacturing economics, computer applications.

As Professor Greene points out, the need for "fields" in the various professional divisions of engineering has come about because of the increasing complexity of subject matter. For example, the electronic and power subdivisions are well recognized in electrical engineering as are machine design and thermodynamics in mechanical engineering. The need for fields is not as apparent in an embryonic profession and not until recently has this been felt in industrial engineering. The fields listed above are tentative; additional and alternative fields will be developed in time. An example of a master's degree program built around the field concept and based on twenty-four hours of course work plus a thesis might be as follows:

Major:	12 hours in industrial engineering
1st Minor:	6 hours in industrial engineering or other accepted fields of engineering
2nd Minor:	6 hours in either a technical or non-technical subject such as physiology, economics, psychology, or others
Total	24 hours (plus a thesis)

Of special importance in this program is the emphasis on engineering. Not only must the candidate hold an undergraduate engineering degree, but his twelve-hour major and one of the six-hour minors must also be in engineering.

RESEARCH PROJECTS REPORTED IN PROGRESS BY ACADEMY MEMBERS

The Western Management Science Institute has granted Dr. Keith Davis, of Arizona State University, $1,200 for a research project entitled, "A Preliminary Study of Management Patterns of Research Project Engineers."

Dr. Bruce E. De Spelder is engaged in a summer research project involving business simulation and its application to the education of business students at Wayne State University.

Professor Ralph N. Traxler, of Emory University, has received a research grant to continue a study of Executive Evaluation Methods and Procedures. The first part of his research was published in the April, 1960 issue of *Personnel Journal*.

"The Management of Changes of Supervisory Personnel: A Study of Strategies, Tactics, and Impacts" is the topic of current research being done by Professor William B. Wolf, of the University of Southern California.

BOOKS REPORTED IN PROGRESS BY ACADEMY MEMBERS

Blazer and Ashland Oil: A Study in Management, by Joseph L. Massie, of the University of Kentucky, has recently been published by the University of Kentucky Press.

Management of Industrial Enterprises, by Richard N. Owens, published by Richard D. Irwin, Inc., has been translated into Spanish for use in Argentina and other South American countries. The translation was done by Dr. Juan Llamazares, of the University of Buenos Aires, for publication by the Editorial Selección Contable, Buenos Aires. Professor Owens is Visiting Professor of Business Administration at Los Angeles State College for the school year 1960-61. He retired from George Washington University in June, 1960.

Dr. R. W. Morell, Chairman of the Department of Business Administration, St. Joseph's College, Rensellaer, Indiana, is author of *Managerial Decision-Making.* The new book is to be published in August, 1960 by the Bruce Publishing Company.

The Wadsworth Publishing Company, of San Francisco, is soon to publish *The Management of Personnel,* by William B. Wolf, of the University of Southern California.

Dr. David G. Moore, of Michigan State University, is on a sabbatical leave for the period June 15 to September 15, 1960 to work on a revision of his book *Human Relations in Industry.*

Developing Management Ability, by Earl G. Planty and J. Thomas Freeston, has recently been translated into Spanish at Madrid, Spain and published by Imprenta Moderna of Barcelona and Paris. The book was originally published by the Ronald Press Company.

The McGraw-Hill Book Company published *Management Decision Simulation* in June of this year. The book was written by Dean Stanley Vance of Kent State University. Professor Vance has another text in process entitled *Industrial Structure and Policy.* It is scheduled for publication in the spring of 1961 by Prentice-Hall, Inc.

Richard D. Irwin, Inc. published the *Life Insurance Handbook* early this year. The section on "Agency Financial Management" was written by Academy member Thomas J. Luck.

Herbert G. Zollitsch and Adolph Langsner are co-authoring a textbook called *Wage and Salary Administration.* The new text is being published by the South-Western Publishing Company and is scheduled to appear in the spring of 1961.

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